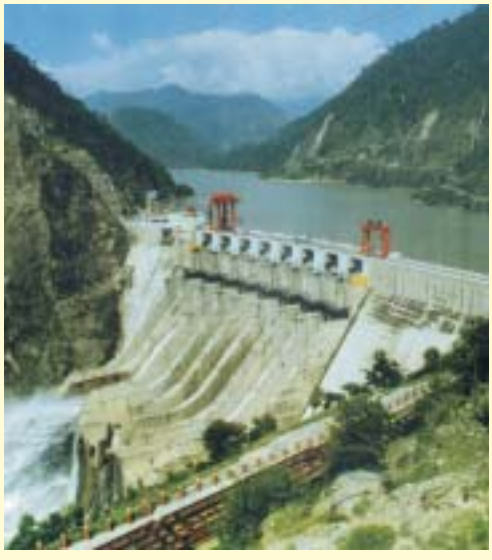
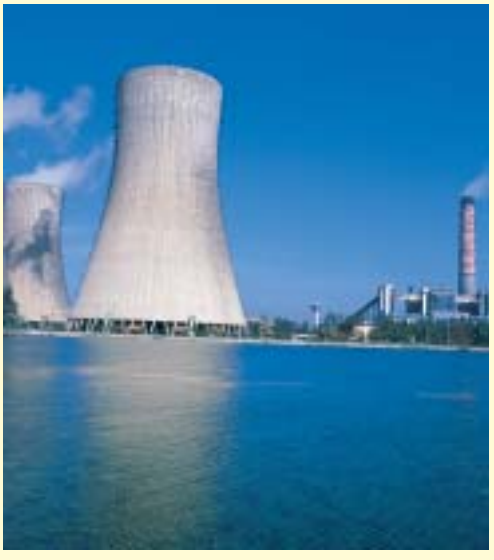
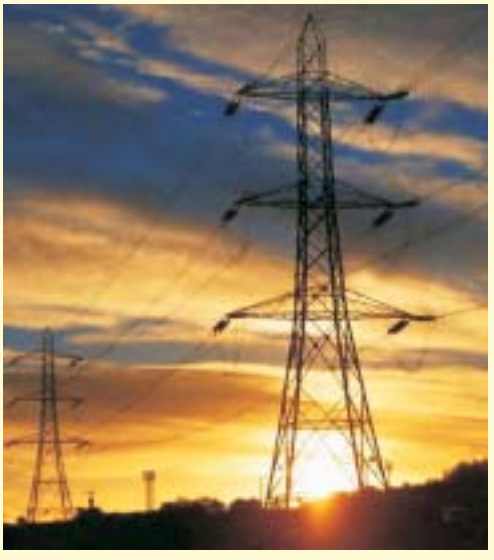
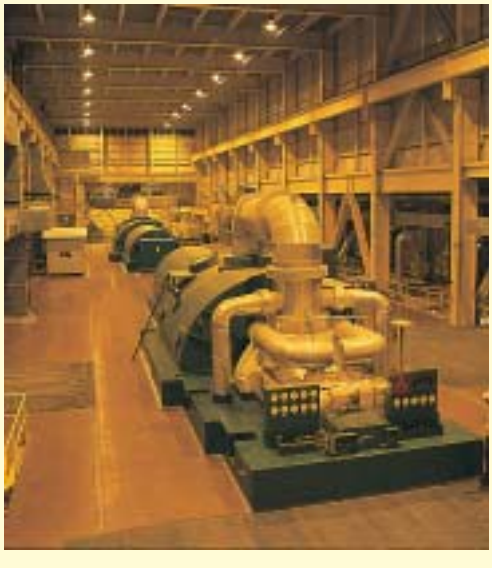
ANNUAL REPORT

2005-2006





सत्यमेव जयते

Ministry of Power

Government of India

MAP OF INDIA

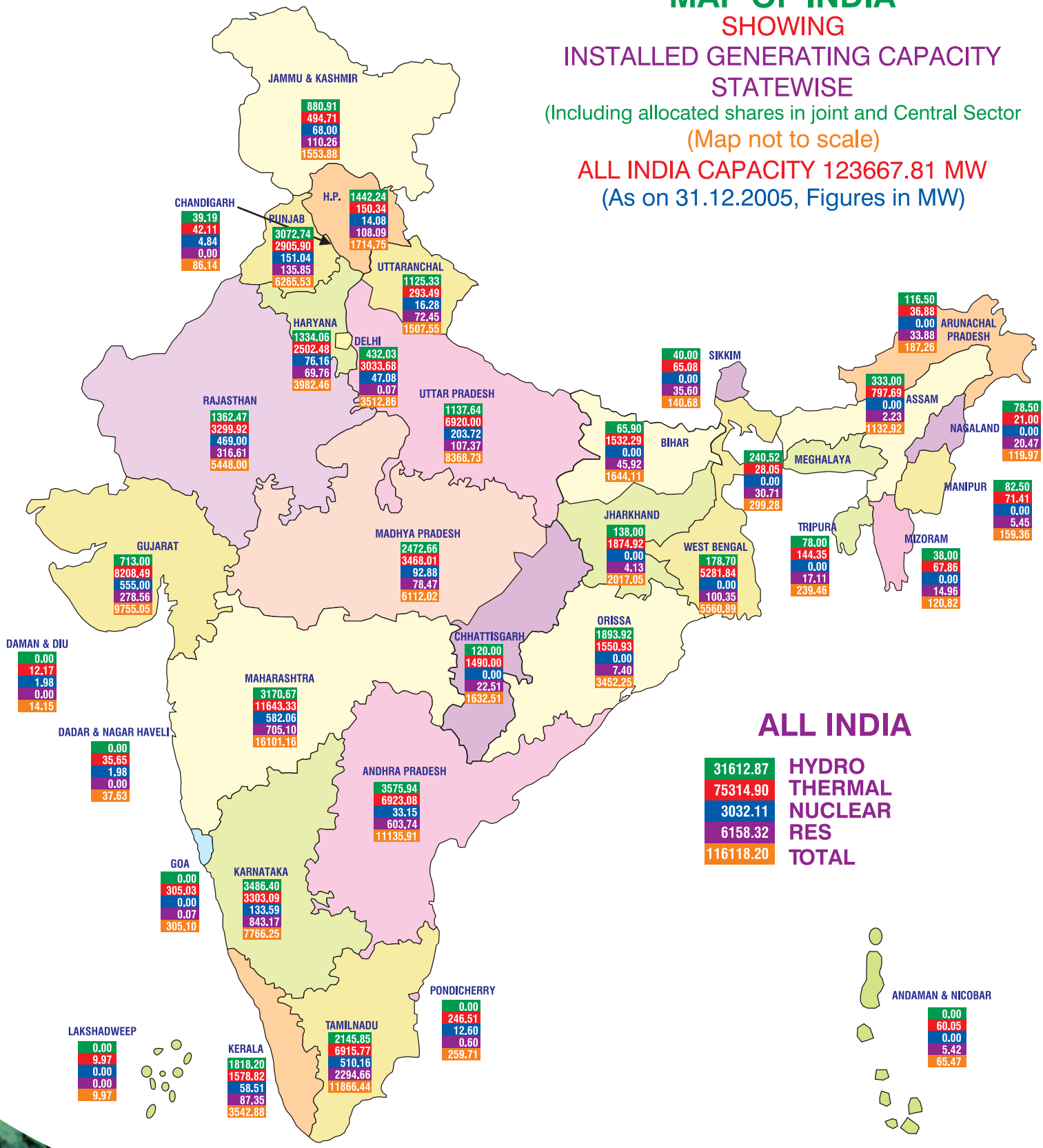
SHOWING
INSTALLED GENERATING CAPACITY
STATEWISE

(Including allocated shares in joint and Central Sector

(Map not to scale)

ALL INDIA CAPACITY 123667.81 MW

(As on 31.12.2005, Figures in MW)



ALL INDIA

31612.87	HYDRO
75314.90	THERMAL
3032.11	NUCLEAR
6158.32	RES
116118.20	TOTAL

ANNUAL REPORT

2005-2006

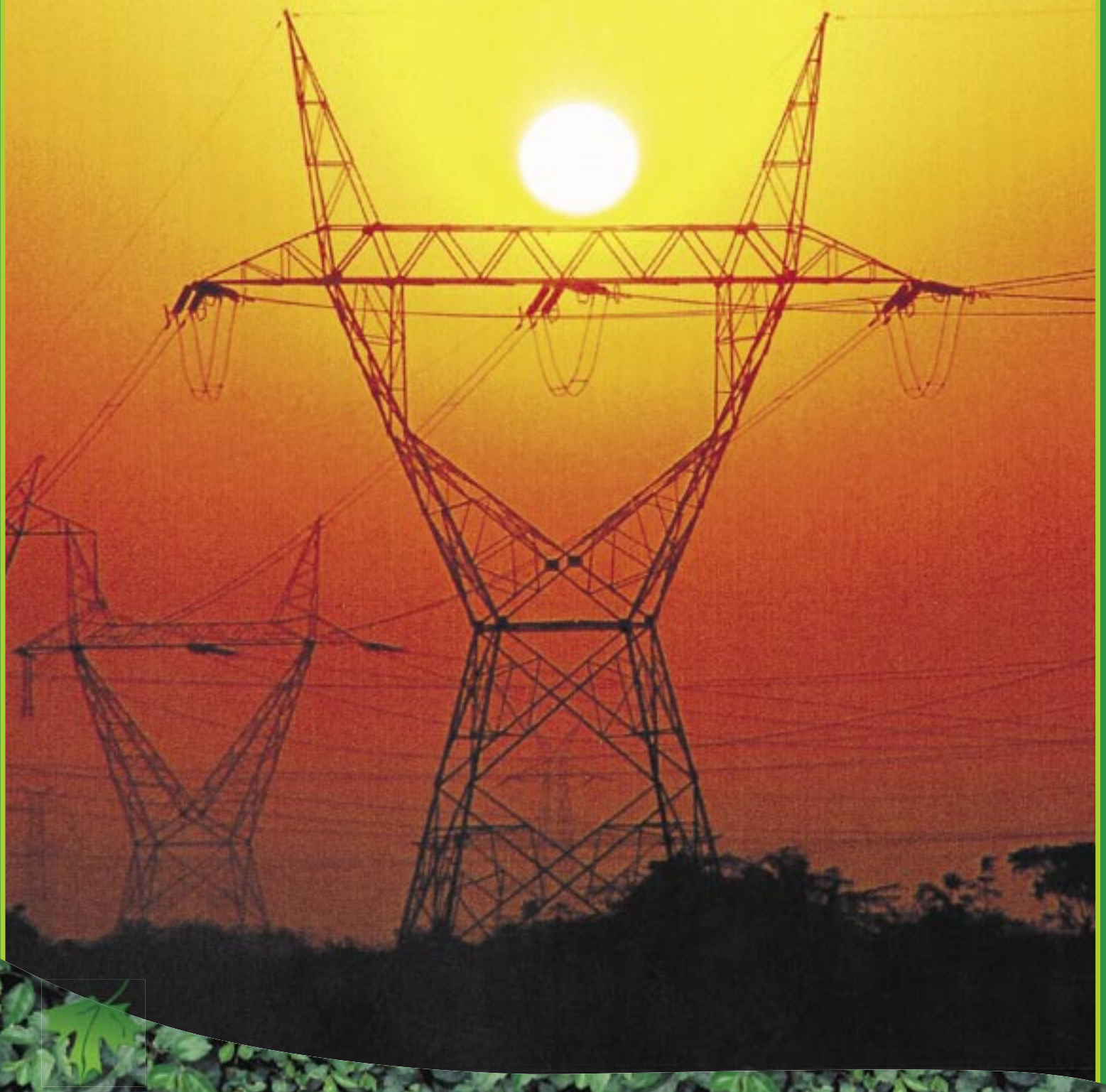
सत्यमेव जयते

Ministry of Power

Government of India

Shram Shakti Bhawan, Rafi Marg, New Delhi

Website : www.powermin.nic.in



CONTENTS

Chapter - 1

PERFORMANCE HIGHLIGHTS

THE NATIONAL ELECTRICITY POLICY HAS BEEN NOTIFIED

The Policy aims at accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources technology available to exploit these resources, economics of generation using different resources and energy security issues. Salient features of the policy are as under:

- Access to Electricity: Available for all households in next five years.
- Availability of Power: Demand to be fully met by 2012. Energy and peaking shortages to be overcome and spinning reserve to be available.
- Supply of Reliable and Quality Power of specified standards in an efficient manner and at reasonable rates.
- Per capita availability of electricity to be increased to over 1000 units by 2012.
- Minimum lifeline consumption of 1 unit/household/day as a merit good by year 2012.
- Financial Turnaround and Commercial Viability of Electricity Sector.
- Protection of consumers' interests.

REFORM STATUS

- All states have signed MoU, MoA & TPAs
- 24 states have constituted SERCs and 19 SERCs have issued tariff orders.
- 13 states unbundled/corporatised, Delhi (2002) & Orissa (1999) privatized their SEBs.
- 100% 11 kV feeder metering completed in 18 states and 5 states have achieved more than 90% metering.
- 100% consumer metering have been completed in 4 states and 9 states have achieved more than 90% metering.

50000 MW Hydro Initiative

Preliminary Feasibility Reports (PFRs) of 162 identified Hydro Electric Schemes with an aggregate Installed Capacity of 47930 MW located in 16 States of the Country were prepared.

RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJNA OF RURAL ELECTRICITY INFRASTRUCTURE AND HOUSEHOLD ELECTRIFICATION

Central Govt. has launched a new scheme "Rajiv Gandhi Grameen Vidyutikaran Yojna of Rural Electricity Infrastructure and Household Electrification" on 4th April, 2005 for the attainment of the National Common Minimum Programme (NCMP) goal for providing access to electricity to all households in the country in five years. The scheme would be implemented through Rural Electrification Corporation (REC).

Under the scheme 90% capital subsidy would be provided for overall cost of the project for provision of:

- Rural Electricity Distribution Backbone (REDB) with at least one 33/11kV (or 66/11kV) substation in each block.
- Village Electrification Infrastructure (VEI) with at least one distribution transformer in each village/habitation.
- Decentralized Distributed Generation (DDG) Systems where grid supply is not feasible or cost-effective.
- Till February 2006, approximately 5000 villages have been electrify during 2005-2006.

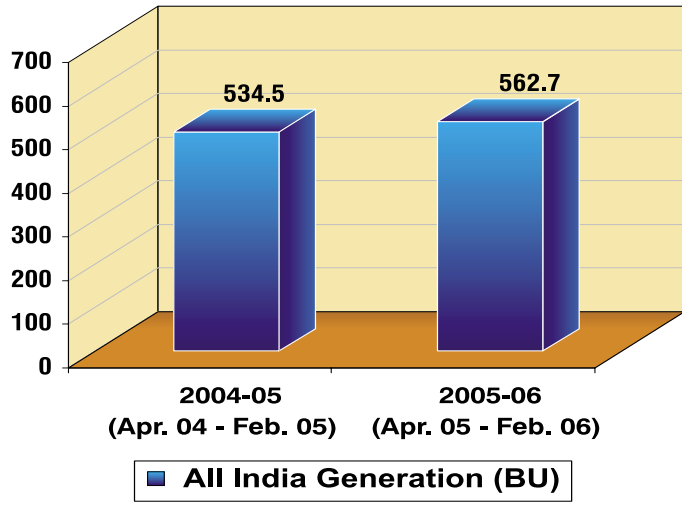
Generation Performance

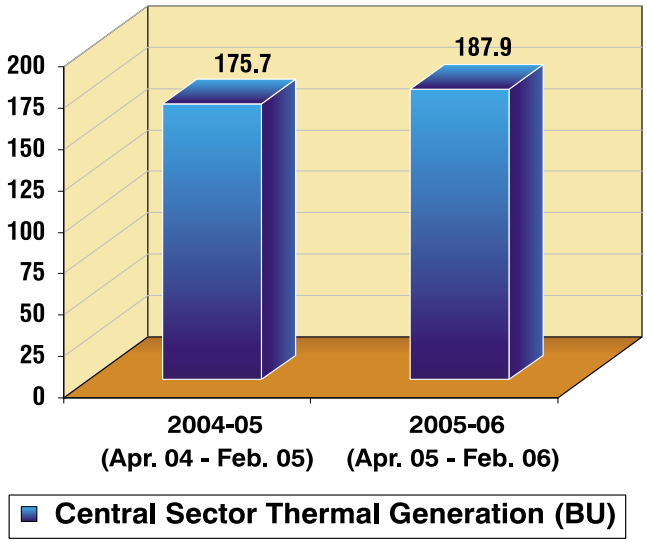
◆ Generation during the year 2005-06 is targeted at 621.5 BU i.e. growth of 6% over generation target of 586.4 BU for the previous year.

- In the current financial year during period Apr-Feb. 2006 the actual generation was 562.7 BU against 534.5 BU generated during corresponding period of previous financial year representing a growth rate of about 5.3%. Loss of generation due to shortage (mainly gas) was of the order of 21BU. But for this, growth rate would have been about 9.2%.

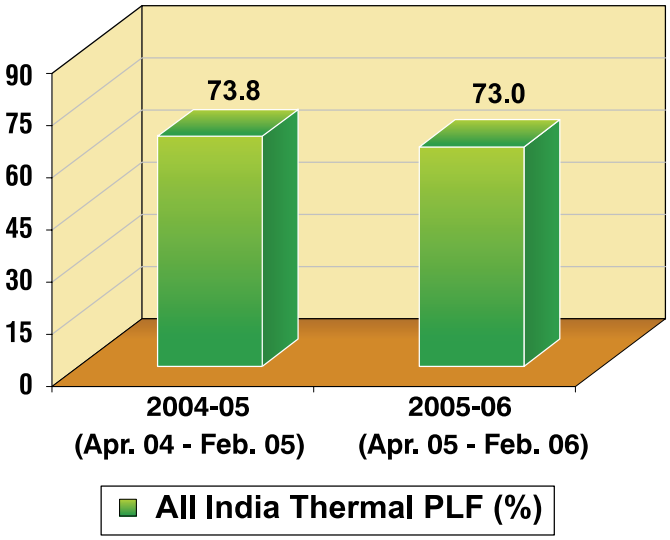
- Over all PLF of thermal power stations during the period April '05 - February '06 in current financial year has been 73% against 73.8% in the corresponding period of last year.
- The PLF of central generating stations has improved to 81.5% during April '05 - February '06 from 80.7% during corresponding period of previous year.

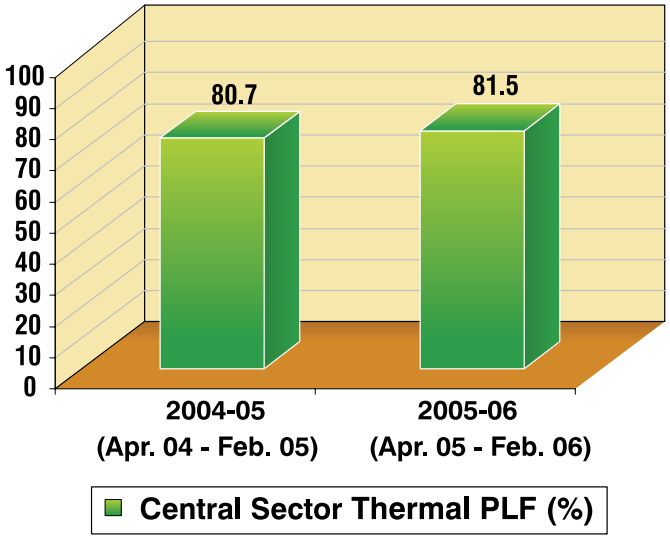
Generation





PLF of Thermal Stations





100,000 MW Thermal Initiative

To accelerate the hydro power development, 50,000 MW hydro electric initiative was launched by Hon'ble Prime Minister of India on May 24, 2003. keeping in view the huge power generation capacity requirement, Ministry of Power/CEA has proposed 1,00,000 MW environment friendly Thermal initiative.

CEA has identified shelf of sites for thermal power projects totaling to about 88,000 MW capacity. Further sites are being identified through studies by CMPDI & NRSA to achieve 1000,000 MW capacity addition in the next ten years. Out of this shelf about 47,000 MW projects are to be taken up for implementation during 11th Plan and remaining projects during 12th Plan.

Setting up of Ultra Mega Power Projects

The Ministry of Power, Govt. of India has launched an initiative for development of five coal based Ultra Mega Power Projects in India, each with a capacity of 4000 MW or above. These projects will be awarded to developers on the basis of tariff based competitive bidding.

To facilitate tie-ups of inputs and clearances project specific Shell companies have been set up as wholly owned subsidiaries of the Power Finance Corporation Ltd. These companies will undertake preliminary studies and obtain necessary clearances including water, land, fuel, power selling tie-up etc. prior to award of the Project to the successful bidder.

Initially five sites are being identified by CEA in five different states for the proposed Ultra Mega Power Projects. These include two pithead sites on each in Madhya Pradesh and Chhattisgarh and three coastal sites in Gujarat, Karnataka & Maharashtra. It is proposed to set up pithead projects as integrated proposals with corresponding captive coal mines. Ministry of Power has already requested to Ministry of Coal to identify such large coal blocks. For the coastal projects imported coal shall be used.

The projects are to be developed with a view to result in minimum cost of power to the consumers. Because of bigger size units, the cost of the project would; be lower due to economy of scale. Further the layout of the project would be compact and all systems would be optimized to result in lower cost of power. Further projects would be environment friendly adopting supercritical technology to reduce emissions.

A time bound action plan for preparation of project report, tie-up of various inputs/clearances, appointment of consultants, preparation of RFQ/RFP have been prepared. The whole process up to selection of bidder is proposed to be completed in a period of one year. Once the developer is selected, the ownership of the Shell companies shall be transferred to the successful bidders.

National Electricity Tariff policy has been notified

National Grid

- Inter Regional Transmission Capacity has increased to 9500 MW.

Distribution Reforms

- 158 Towns have achieved AT&C loss less than 15% and 38 towns less than 20%

Energy Conservation

- Energy Audit and Energy Saving Projects in Rashtrapati Bhawan have been completed and a saving of the order of 25% in electricity consumption is targetted.
- During 2005, 311 industrial units participated in National Energy Conservation Award Scheme and affected a saving of as much as Rs. 989 crore in energy consumption.

Chapter - 2

MINISTRY OF POWER

The Ministry of Power started functioning independently with effect from 2nd July, 1992. Earlier it was known as the Ministry of Energy comprising the Departments of Power, Coal and Non-Conventional Energy Sources.

Electricity is a concurrent subject at entry number 38 in the List III of the Seventh Schedule of the Constitution of India. The Ministry of Power is primarily responsible for the development of electrical energy in the country. The Ministry is concerned with perspective planning, policy formulation, processing of projects for investment decisions, monitoring of the implementation of power projects, training and manpower development and the administration and enactment of legislation in regard to thermal, hydro power generation, transmission and distribution. The Ministry has developed its website www.powermin.nic.in.

The Ministry of Power is mainly responsible for evolving general policy in the field of energy. The main items of work dealt with by the Ministry of Power are as given below:

- General Policy in the electric power sector and issues relating to energy policy and coordination thereof. (Details of short, medium and long-term policies in terms of formulation, acceptance, implementation and review of such policies, cutting across sectors, fuels, regions and intra-country and inter-country flows);
- All matters relating to hydro-electric power (except small/mini/micro hydel projects of and below 25 MW capacity) and thermal power and transmission & distribution system network;
- Research, development and technical assistance relating to hydro-electric and thermal power, transmission system network and distribution systems in the States/UTs;

Shri Sushilkumar Shinde at the Foundation Stone Laying Ceremony of Farakka Super Thermal Power Project (500MW - Stage -III) in West Bengal, along with Shri Buddhadeb Bhattacharjee, Chief Minister of West Bengal, Shri Pranab Mukherjee, Defence Minister and other dignitaries

- Administration of the Electricity Act, 2003, (36 of 2003), the Energy Conservation Act, 2001 (52 of 2001), the Damodar Valley Corporation Act, 1948 (14 of 1948) and Bhakra Beas Management Board as provided in the Punjab Reorganisation Act, 1966 (31 of 1966).
- All matters relating to Central Electricity Authority, Central Electricity Board and Central Electricity Regulatory Commission;
- Rural Electrification;
- Power schemes and issues relating to power supply/ development schemes/programmes/ decentralized and distributed generation in the States and Union Territories;
- Matters relating to the following Undertakings / Organizations:-
  a. Damodar Valley Corporation;
  b. Bhakra Beas Management Board (except matters relating to irrigation);
  c. National Thermal Power Corporation Limited;
  d. National Hydro-electric Power Corporation Limited;
  e. Rural Electrification Corporation Limited;
  f. North Eastern Electric Power Corporation Limited;
  g. Power Grid Corporation of India Limited;
  h. Power Finance Corporation Limited;
  i. Tehri Hydro Development Corporation;
  j. Satluj Jal Vidyut Nigam Limited;
  k. Central Power Research Institute;
  l. National PowerTraining Institute;
  m. Bureau of Energy Efficiency;
- All matters concerning energy conservation and energy efficiency pertaining to Power Sector.

ORGANISATIONS UNDER THE MINISTRY OF POWER

In all technical and economic matters, Ministry of Power is assisted by the Central Electricity Authority (CEA), constituted under section 3(1) of the Electricity (Supply) Act, 1948 which has now been replaced by Electricity Act, 2003. The CEA advises the Ministry of Power on all technical and economic matters.

Badarpur Management Contract Cell (BMCC), a subordinate office of this Ministry, is responsible for administering the Badarpur Thermal Power Station (BTPS) Management Contract between the Government of India and NTPC.

The construction and operation of generation and transmission projects in the Central Sector are entrusted to Central Sector Power Corporations, viz. The National Thermal Power Corporation (NTPC), the National Hydro Electric Power Corporation (NHPC), the North-Eastern Electric Power Corporation (NEEPCO) and the Power Grid Corporation of India Limited (PGCIL). The PGCIL is responsible for all the existing and future transmission projects in the Central Sector and also for the formation of the National Power Grid. Two Joint Venture Power Corporations namely, Satluj Jal Vidyut Nigam (SJVN) and Tehri Hydro Development Corporation (THDC) are responsible for the execution of the Satluj Jal Vidyut Nigam (SJVN) in Himachal Pradesh and projects of the Tehri Hydro Power Complex in Uttaranchal respectively. Statutory bodies i.e., Damodar Valley Corporation (DVC) and Bhakra Beas Management Board (BBMB) are also under the administrative control of the Ministry of Power. Programmes of rural electrification are provided financial assistance by the Rural Electrification Corporation (REC) under the Ministry of Power. The Power Finance Corporation (PFC) provides term-finance to projects in the power sector.

Further, the Autonomous Bodies (Societies) i.e. Central Power Research Institute (CPRI), the National Power Training Institute (NPTI) and the Bureau of Energy Efficiency (BEE) are also under the administrative control of the Ministry of Power. Power Trading Corporation (PTC) was also set up in 1999 to catalyse development of mega power projects, as well as vibrant power market and to promote exchange of power with neighbouring countries.

ORGANISATIONAL SET-UP

Late Shri P.M. Sayeed was the Minister of Power from the 25th May, 2004 upto the 18th December, 2005.

Shri Sushil Kumar Shinde is the Minister of Power with effect from the 30th January, 2006.

Shri R.V. Shahi is the Secretary in the Ministry of Power since the 13th April, 2002. The Ministry has two Additional Secretaries and five Joint Secretaries, including the Finance Advisor.

Shri U.N. Panjiar, Additional Secretary, oversees the work relating to Policy, Planning and International Cooperation (PP&IC), Reforms and Restructuring;

The allocation of work among the five Joint Secretaries in the Ministry of Power is as under:

(i) Thermal, Administration including the administrative matters of Central Electricity Authority, Operation Monitoring (OM) and Official Language;

(ii) Hydro Power, Coordination, Press & Publicity, Vigilance & Security and Investment Promotion Cell;

(iii) Rural Electrification, Rural Electricity Supply Technology (REST) Mission, Distribution Reforms, Accelerated Power Development & Reforms Programme (APDRP), Power Finance Corporation and Information Technology;

(iv) Power Transmission, Power Trading Corporation, Training & Research, Energy Conservation, Bureau of Energy Efficiency;

(v) Accounts & Finance, Resource Planning, Monitoring of financial performance of SEBs and follow up action on the recommendations of Montek Singh Ahluwalia Committee & NK Singh Committee.

There is a Principal Accounts Office headed by the Controller of Accounts, who in turn reports to the Financial Advisor in the Ministry of Power. Matters relating to reservations for SC, ST, Physically Handicapped and Ex-Servicemen in the Ministry including PSUs under its administrative control are dealt by the Deputy Secretary(Admn.), who is also the Liaison Officer for SC/ST and there is separate Liaison Officer for OBCs. Matters relating to recreation activities are dealt by Power Sports Control Board. The total sanctioned strength of the Ministry is 336.

480 MW URI Power Station (J&K) - Barrage

ORGANIZATIONAL STRUCTURE

SHRI SUSHIL KUMAR SHINDE
MINISTER OF POWER

R.V. SHAHI, SECRETARY (POWER)

Central Public Sector undertakings

- National Thermal Power Corporation — C.P. Jain, CMD
- Powergrid Corporation of India Ltd. — R.P. Singh, CMD.
- National Hydroelectric Power Corpn. — S.K. Garg, CMD
- North Eastern Electric Power Corpn. — S.C. Sharma, CMD
- Satluj Jal Vidyut Nigam Limited — H.K. Sharma, CMD
- Tehri Hydro Development Corpn. — R.K. Sharma, CMD
- Power Finance Corporation — V.K. Garg, CMD
- Rural Electrification Corporation — Anil Kumar Lakhina

Central Electricity Authority

- Rakesh Nath, CPES — Chairperson
- R.K. jain, CPES — Member, Thermal
- Gurdial Singh — Member, Hydro
- Santosh Kumar CPES — Member, Grid Operation & Distribution
- V.S. Verma CPES — Member, Planning
- V. Ramakrishna — Member, Power Systems
- V. Ramakrishna, CPES — Economic & Commercial Member (Addl. Charge)

Ministry of Power

- Ajay Shankar — Addl. Secretary
- A.K. Kutty — Jt. Secretary
  - Hydel
  - Coord
  - Vigilance
  - IPC
- Gireesh Pradhan — Jt. Secretary
  - Trans
  - EC
  - T&R
- M. Sahoo — Jt. Secy. & FA
- U.N. Panjiar — Addl. Secretary
  - Reforms & Restructuring
  - Policy Planning
  - International Cooperation
- Harish Chandra — Jt. Secretary
  - Adm.
  - Thermal
  - OL
  - OM
- Arvind Jadhav — Jt. Secretary
  - RE; REC
  - APDRP
  - Dist.
  - PFC
  - IT

Other Organizations

- Damodar Valley Corporation — R. K. Sen, Chairman (Addl. Charge)
- Bhakra Beas Mgm. Board — Rakesh Nath, Chairman (Addl. Charge)
- Power Trading Corporation India Ltd. — T.N. Thakur, CMD
- National Power Training Institute — Santosh Kumar, DG
- Central Power Resrch Institute — A.K. Tripathy, DG
- Bureau of Energy Efficiency — V.S. Verma, DG

Chapter - 3

GENERATION & POWER SUPPLY POSITION

GENERATION

The overall generation in the country has increased from 264 Billion Units (Bus) during 1990-91 to 587 Bus during 2004-05. the overall generation (Thermal + Nuclear + Hydro) in public utilities in the country over years is as under:

Year	Generation (Bu)
1990-91	264.3
1995-96	380.1
2000-01	499.5
2001-02	515.3
2002-03	531.4
2003-04	558.3
2004-05	587.4
2005-06 (up to Feb. 06)	562.7

PLANT LOAD FACTOR (PLF)

The all India PLF of thermal utilities during 2004-05 was 74%. The comparative sectorwise PLF in percentage over the years is as follows:

Year	Central	State	Private	Overal
1990-91	58.1	51.3	58.4	53.8
1995-96	70.9	58.0	72.3	63.0
2000-01	74.3	65.6	73.0	69.0
2001-02	74.3	67.0	74.7	69.9
2002-03	77.1	68.7	78.9	72.2
2003-04	78.7	68.4	80.4	72.7
2004-05	81.7	69.6	85.1	74.8
2005-06	81.5	66.4	85.1	73.0
(up to Feb. 06)				

POWER SUPPLY POSITION

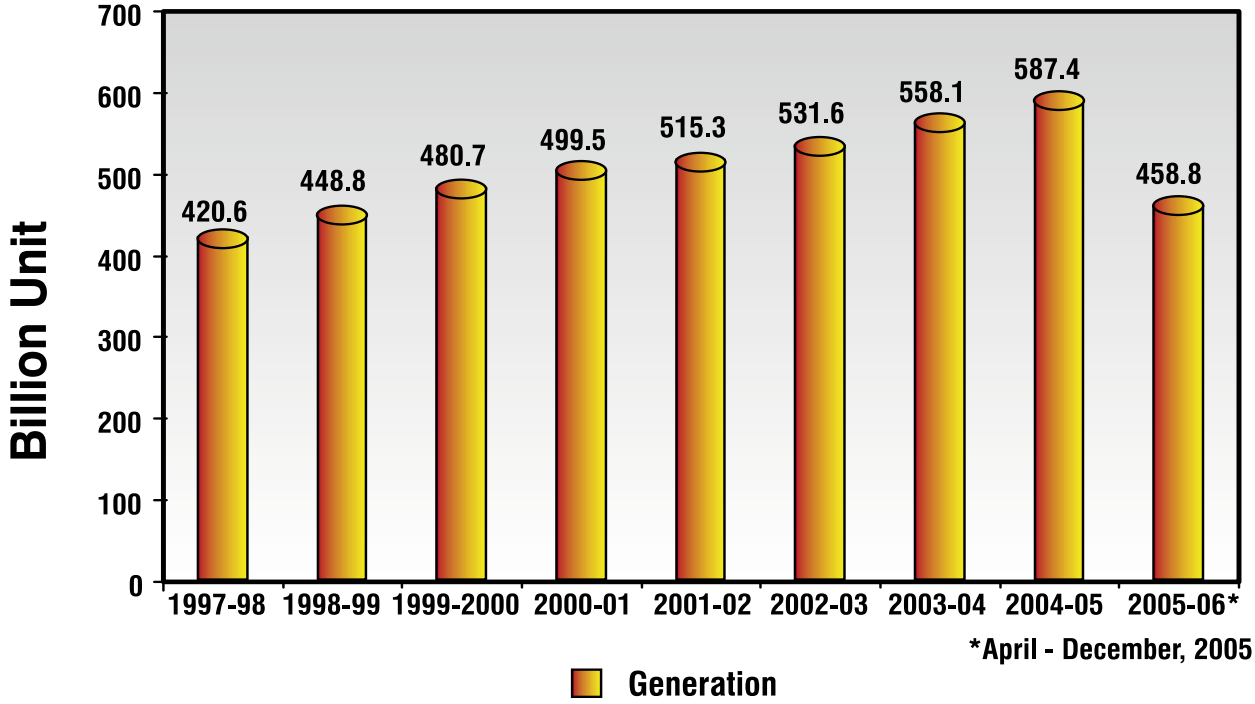
The power supply position from 1997-98 onwards is as under:-

Year	Energy Requirement/(MU)	Energy Availability/(MU)	Energy Shortage/MU)	Energy Shortage (%)
1997-98	424505	390330	34175	8.1
1998-99	446584	420235	26349	5.9
1999-2000	480430	450594	29836	6.2
2000-01	507216	467400	39816	7.8
2001-02	522537	483350	39187	7.5
2002-03	545983	497890	48093	8.8
2003-04	559264	519398	39866	7.1
2004-05	591373	548115	43258	7.3
2005-06	466109	430408	35701	7.7
(up to Dec. 05)				

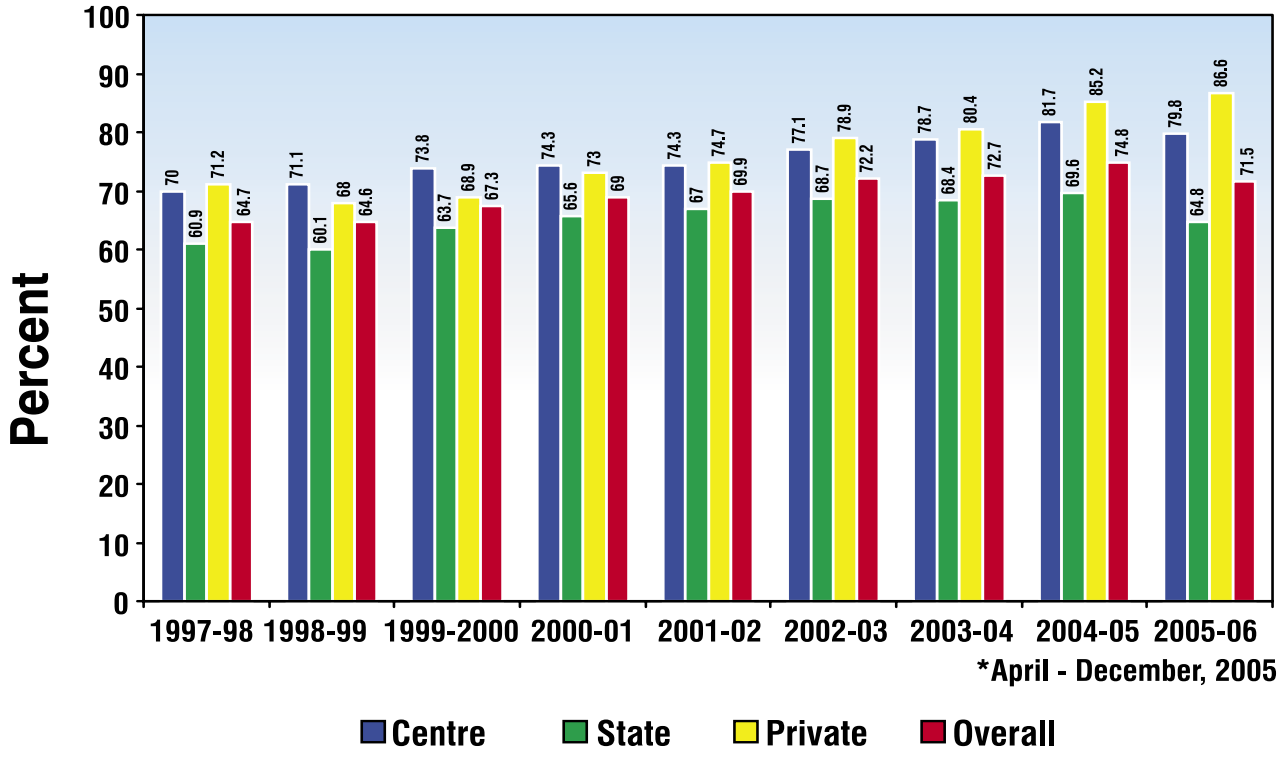
Peak Demand:

Year	Peak Demand(MW)	Peak Met(MW)	Peak Shortage(MW)	Peak Shortage(%)
1997-98	65435	58042	7393	11.3
1998-99	67905	58445	9460	13.9
1999-2000	72669	63691	8978	12.4
2000-01	78037	67880	10157	13.0
2001-02	78441	69189	9252	11.8
2002-03	81492	71547	9945	12.2
2003-04	84574	75066	9508	11.2
2004-05	87906	77652	10254	11.7
2005-06 (upto Dec.05)	90119	80631	9488	10.5

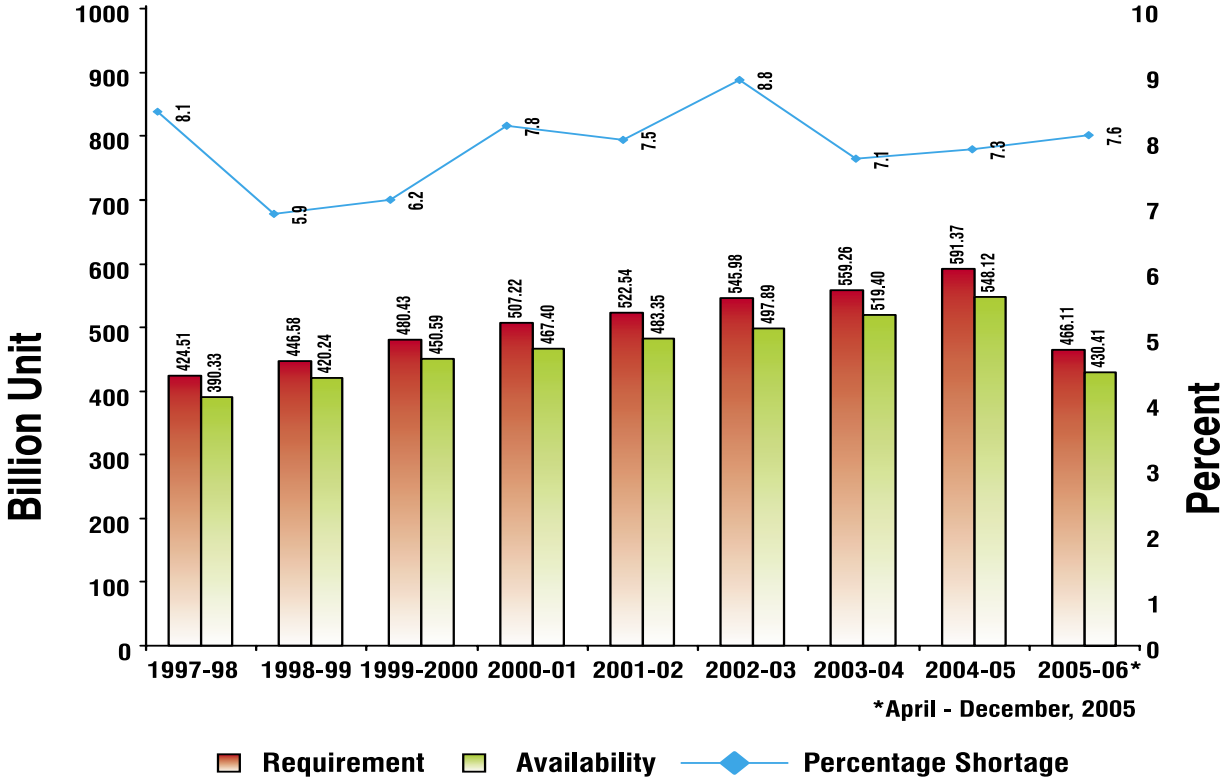
Generation



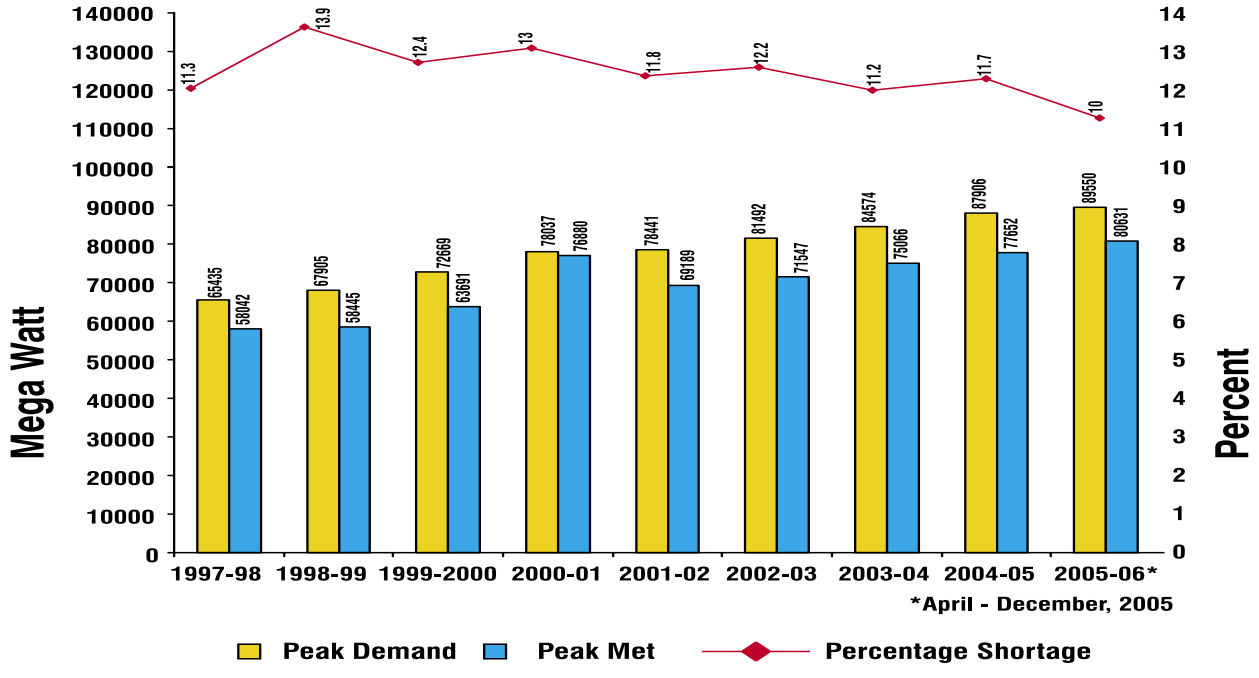
Sector-Wise Plant Load Factor



Power Supply Position - Energy



Power Supply Position - Peak



Comprehensive Award Scheme

With a view to inculcate competitive spirit and to motivate Power Utilities, to achieve high level of efficient and economic operation of thermal power stations in the country, Ministry of Power has been giving away Meritorious Productivity Awards and Incentive Awards for Reduction of Secondary Fuel Oil Consumption and Auxiliary Power Consumption.

The scope of existing incentive scheme has now been enlarged and it has been decided to institute a Comprehensive Award Scheme for the Power Sector with effect from the year 2004-05 to cover performance of Themral Hydro and Nuclear Power stations, Transmission System and Distribution systems as well as early completion of Thermal, Hydro and Transmission projects. The above Comprehensive Award Scheme will cater the following categories of awards:

1. Thermal Power Station Performance Awards.
2. Early Completion of Thermal Power Projects Awards.
3. Hydro Power Station Performance Awards.
4. Early Completion of Hydro Power Projects Awareds.
5. Transmission System Availability Awards.
6. Early Completion of Transmission Power Projects Awards.
7. Nuclear Power Station Generation Awards.
8. Performance Awards for distribution companies.

Chapter - 4

CAPACITY ADDITION: PROGRAMME AND ACHIEVEMENTS

INSTALLED CAPACITY

The all India installed capacity of electric power generating stations under utilities was 118419.09 MW as on 31.3.2005 consisting of 80902.45 MW thermal, 30935.63 MW hydro, 2770.00 MW nuclear, 2979.70 MW wind and 831.31 MW Renewable Energy Sources which has increased to 1,23,900.81 MW as on 28.02.2006 consisting of 82,297.44 MW thermal, 32135.05 MW hydro, 3310.00 MW nuclear and 6158.32 MW R.E.S.

CAPACITY ADDITION PROGRAMME FOR THE 10TH FIVE YEAR PLAN

A capacity addition of 41,110 MW has been targeted for the 10th Five Year Plan. Sector-wise details are as under:-

Source	Central	State	Private	Total
Hydro	8742	4481	1170	14393
Thermal	12790	6676	5951	25417
Nuclear	1300	-	-	1300
Total	**22832**	**11157**	**7121**	**41110**

At the time of Mid Term Appraisal, a capacity addition of 36956 MW, against the target of 41110 MW, was found feasible during 10th Plan period. The break-up is as under:-

Source	Central	State	Private	Total
Hydro	6177	4248	700	11125
Thermal	11070	7992	4199	23261
Nuclear	2570	0.00	0.00	2570
Total	**19817**	**12240**	**4899**	**36956**

At present, a capacity of 34024 MW is likely to be achieved during 10th Plan. The sector-wise and type-wise break-up is as under:-

Sector-wise

(in MW)

	Original target	Units commissioned	Under Execution	Works to be awarded/under approval	Overall capcity addition now anticipated
Central	22832	8325	8900	0	17225*
State	11157	4070.64	7830.02	0	11900.66
Private	7121	1378.8	3519.8	0	4898.6
Total	41110	13774.44	20249.82	0	34024.26

*including 2520 MW nuclear projects under construction

Type-wise

(in MW)

	Original target	Units commissioned	Under Execution	Works to be awarded/under approval	Overall capcity addition now anticipated
Thermal	25417	7804.44	13425.72	0.00	21230.16
Hydro	14393	5380	4794.1	0.00	10174.1
Nuclear	1300	590	2030	0.00	2620
Total	**41110**	**13774.44**	**20249.82**	**0.00**	**34024.26**

CAPACITY ADDITION PROGRAMME FOR 2004-05 AND ACHIEVEMENT DURING 2004-05

PROGRAMME-2004-05

(in MW)

	Central Sector	State Sector	Private Sector	Total
Thermal	1710.00	777.92	172.60	2660.52
Hydro	1920.00	665.00	0.00	2585.00
Nuclear	0.00	0.00	0.00	0.00
Total	**3630.00**	**1442.92**	**172.60**	**5245.52**

Achievement – 2004-05

	Central Sector	State Sector	Private Sector	Total
Hydro	500.00	515	0.00	1015
Thermal	2210.00	653.92	70.00	2933.92
Nuclear	0.00	0.00	0.00	0.00
Total	**2710.00**	**1168.92**	**70.00**	**3948.92**

Capacity addition programme during 2005-06 and achievement till 31.01.2006

Programme – 2005-06

(in MW)

	Central Sector	State Sector	Private Sector	Total
Thermal	1210.00	865.92	1382.60	3458.52
Hydro	1670.00	1216.00	0.00	2886.00
Nuclear	590	0.00	0.00	590.00
Total	**3470.00**	**2081.92**	**1382.60**	**6934.52**

Achievement – 2005-06 (April, 2005 to January, 2006)

	Central sector	State sector	Private sector	Total
Hydro	280.00	860.00	0.00	1140.00
Thermal	500.00	125.00	660.80	1285.80
Nuclear	540.00	0.00	0.00	540.00
Total	**1320**	**985**	**660.80**	**2965.80**

Capacity addition (last five years)

In the last five years including 2005-06 (April 2005 – December, 2005), the following new capacities have been added:

(MW)

Year	Centre	State	Private	Total
2000-01	659.00	2375.77	864.20	3898.97
2001-02	905.00	1393.9	816.3	3115.2
2002-03	1210.00	1100.10	548.00	2858.10
2003-04	3035.00	816.62	100.00	3951.62
2004-05	2710.00	1168.92	70.00	3948.92
2005-06 (April, 2005 to Jan. 2006)	1320.00	985.00	660.80	2965.80

Financial outlays

(Rs. in crore)

	10th Plan	2002-03	2003-04	2004-05	2005-06
Allocation	143399 (GBS 25000, IEBR 118399)	13483 (GBS 3300, IEBR 10183)	14667.61 (GBS 3500, IEBR 11167.61)	15630.32 (GBS 3600, IEBR 12030.32)	23013.90 (GBS 4100, IEBR 18913.90)
Spent		8649.22 (GBS 1830.46, IEBR 6818.76)	10740.80 (GBS 1846.46, IEBR 8894.34)	12947.57 (GBS 2287.78, IEBR 10659.79)	9463.70 (GBS 1821.07, IEBR 7642.63) up to Dec. 2005

New initiatives

Development of Ultra Mega Projects:

Post Electricity Act, 2003, a facilitative environment has been created for development of power projects. National Electricity Policy followed by Tariff Policy and several other tools required for implementation of theAct are now in place. Economies of scale leading to cheaper power can be secured through development of large size power projects using latest super-critical technologies.

Ministry of Power in association with Central Electricity Authority and Power Finance Corporation have been working on the preparatory exercises for development of large size Ultra Mega power projects with each having a capacity of 4,000 MW, which will also have scope for expansion in the future. The idea is to tie up all the initial inputs such as fuel, environmental clearances, water, the likely buyers of power and, therefore, appropriate terms and conditions with utilities and payment security mechanism. Four such sites including two coastal sites one each at Karnataka and Gujarat have been identified for development as Ultra Mega Power plants.

Chapter - 5

Status of Power Sector Reforms

- Twenty four states viz. Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Karnataka, West Bengal, Tamil Nadu, Punjab, Delhi, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Himachal Pradesh, Assam, Chhatisgarh, Uttaranchal, Bihar, Jharkhand, Kerala, Tripura, Sikkim, Jammu & Kashmir and Meghalaya have either constituted or notified the constitution of State Electricity Regulatory Commission.
- Joint Electricity Regulatory Commission has been notified for Mizoram and Manipur.
- Joint Electricity Regulatory Commission has also been notified for Union Territories (except Delhi).
- Twenty SERCs viz. Orissa, Andhra Pradesh, Uttar Pradesh, Maharashtra, Gujarat, Haryana, Karnataka, Rajasthan, Delhi, Madhya Pradesh, Himachal Pradesh, West Bengal, Punjab, Tamil Nadu, Assam, Uttaranchal, Jharkhand, Kerala, Chhattisgarh and Tripura have issued tariff orders.

Tariff Policy

Tariff Policy has been notified by the Government of India on 6th January, 2006 under the provisions of section 3 of the Electricity Act, 2003.

The objectives of the tariff policy are to:

a) Ensure availability of electricity to consumers at reasonable and competitive rates;

b) Ensure financial viability of the sector and attract investments;

c) Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimise perceptions of regulatory risks;

d) Promote competition, efficiency in operations and improvement in quality of supply.

Review of the Electricity Act, 2003

In pursuance of provisions of the National Common Minimum Programme (NCMP) that a review of the Act would be undertaken, the Electricity (Amendment) Bill, 2005 has been introduced in the Lok Sabha on 23.12.2005. The provisions of the Electricity Act, 2003 which are to be amended are as under:

- The concerned State Governments and the Central Government shall jointly endeavour to provide access to electricity to all areas including villages and hamlets through rural electricity infrastructure and electrification of households.
- To delete 'elimination' of cross subsidies as elimination of cross subsidies is not intended in the near future. The provision for reduction of cross subsidies would continue.
- The police would be able to investigate the cognizable offences under the Act and that no prosecution shall be instituted for any offence under the Act except at the instance of the appropriate Government or appropriate Commission or authorized persons. Special Courts constituted under the Act will be able to take cognizance of offences without the accused being committed to them for trial.

Appellate Tribunal for Electricity

- The Central Government has made the Appellate Tribunal for Electricity operational w.e.f. 21st July, 2005.
- The Appellate Tribunal has started hearing appeals against orders of the Regulatory Commissions/ Adjudicating Officers.

Regional Power Committees

Regional Power Committees have been established under Section 2(55) of the Electricity Act, 2003 separately for five regions w.e.f. 29th November, 2005 for facilitating the integrated operation of the power system in these regions.

Electricity Rules, 2005

The Central Government has notified Electricity Rules, 2005 on 8th June, 2005 which carry provisions related to Captive Generating Plants, Consumer Redressal Forum and Ombudsman, Tariff of Generating Companies etc.

Forum of Regulators

Forum of Regulators have been constituted under section 166(2) of the Electricity Act, 2003 on 16th February, 2005.

The Forum shall discharge, interalia, functions viz. analysis of tariff orders and other orders of CERC and SERCs

and compilation of data arising out of the said orders, highlighting especially the efficiency improvements of the utilities, laying of standards of performance of licensees, evolving measures for protection of interest of consumers and promotion of efficiency, economy and competition in power sector.

Reorganisation of State Electricity Boards (SEBs)

Eleven State Governments viz. Assam, Chhattisgarh, Himachal Pradesh, Kerala, Meghalaya, Punjab, West Bengal, Madhya Pradesh, Bihar, Jharkhand, and Tamil Nadu have been granted extension by the Central Government for continuation of their SEBs as State Transmission Utility (STU) or licensee for different periods beyond 9th December, 2005 under section 172(a) of the Act. Bihar and Jharkhand have been granted extension upto 9.3.2006 whereas all other states have been granted extension upto 9.6.2006. States of Madhya Pradesh and Assam have carried out the re-organisation except for the function of trading of electricity for which extension upto 9.6.2006 has been agreed to.

Scheme for One Time Settlement oi outstanding dues payable by SEBs to the CPSUs

Securitisation of outstanding dues

An expert Group under the Chairmanship of Shri Montek Singh Ahluwalia, the then Member (Energy), Planning Commission recommended a scheme for one-time settlement of dues payable by State Electricity Boards (SEBs) to Central Public Sector Undertakings (CPSUs) and the Railways. The recommendations were accepted by the Government of India. All the 28 State Governments signed the Tripartite Agreement envisaged under the scheme which is between the State Government, Reserve Bank of India and the Government of India. Bonds amounting to Rs. 31581.2676 crore have been issued by

Late Shri P.M. Sayeed, former Minister of Power, with Shri R.V. Shahi, Secretary Power and Senior Officers at the India International Trade Fair 2005

27 States. State-wise details of the bonds issued under the scheme is at Annexure. Goa has no outstanding dues. Government of National Capital Territory of Delhi securitized its outstanding dues by converting the dues into long-term advances of Rs. 3376.6960 crore payable to the CPSUs concerned under Bi-partite Agreement as they do not have power to issue Bonds.

Consequent upon the issue of final orders by the Ministry of Power on 04.11.2004 on the division of assets and liabilities of the erstwhile Bihar SEB between the new Bihar and Jharkhand SEBs and Madhya Pradesh Electricity Board between the new Madhya Pradesh and Chattisgarh SEB, the securitization of old outstanding dues for the power sector companies envisaged under the Tripartite Agreement (TPA) is now finally complete with the issue of Bonds by Jharkhand and Bihar on 31-12-2005, except DESU period dues.

Collection Efficiency:

2. The scheme has resulted in improvement in collection of dues of the power sector CPSUs. The details of collection efficiency (in percentage) is shown in the table given below:-

Sl. No.	CPSU	2001-2002	2002-2003	2003 2004	2004-2005	2005-(April to Dec, 2005
1.	NTPC	76.74	92.30	100.00	100.00	100.00
2.	NHPC	69.03	94.44	97.06	100.00	100.00
3.	PGCIL	88.92	95.16	98.30	99.70	100.00
4.	NEEPCO	74.78	71.49	87.50	95.21	100.00

STATEMENT SHOWING POWER BONDS ISSUED

State-wise details

(Rs. in crores)

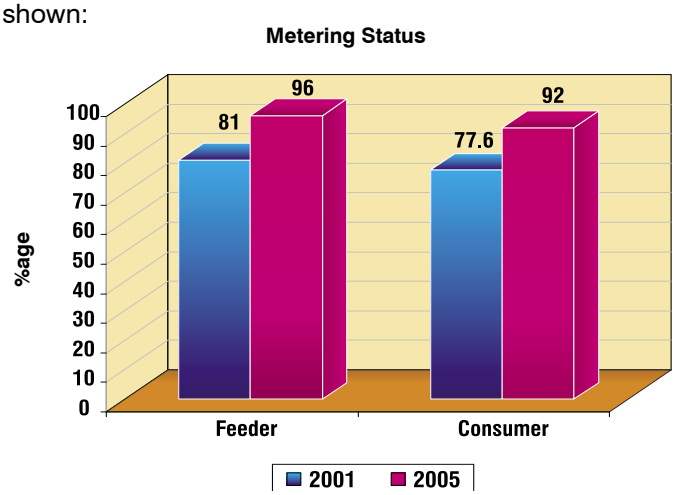
Sl. No.	State	Bond Value
1	Andhra Pradesh	2436.0980
2	Arunachal Pradesh	24.0720
3	Assam	857.534
4	Bihar	2075.6100
5	Chattishgarh	483.2200
6	Goa	0.0000
7	Gujarat	1628.7120
8	Haryana	2022.2900
9	Himachal Pradesh	70.2480
10	Jammu & Kashmir	1590.8120
11	Jharkhand	2115.3236
12	Karnataka	550.9540
13	Kerala	1158.2520
14	Madhya Pradesh	2663.8900
15	Maharashtra	1018.5940
16	Manipur	157.0940
17	Meghalaya	13.9900
18	Mizoram	45.5660
19	Nagaland	78.9200
20	Orissa	1102.8740
21	Punjab	637.3460
22	Rajasthan	368.7820
23	Sikkim	47.8020
24	Tamil Nadu	1962.1400
25	Tripura	63.5080
26	Uttranchal	572.0000
27	Uttar Pradesh	5871.8600
28	West Bengal	1963.7760
	Total:	**31581.2676**
	Add Delhi (excluding DESU period)	3376.6960
	Grand Total including Delhi	**34957.9636**

Chapter - 6

DISTRIBUTION REFORMS & ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (APDRP)

Distribution Reforms: Considering the increasing commercial losses of the state power utilities, the Government of India identified Distribution Reform as the key area to bring about the efficiency and commercial viability into the power sector. Ministry of Power launched reform oriented programme namely Accelerate Power Development and Reforms Programme (APDRP) during 2002-2003. Ministry of Power signed the Memorandum of Understanding with the states to undertake distribution reforms in a time bound manner, which includes setting up of State Electricity Regulatory Commision (SERC), unbundling of State Power Utilities, metering of feeders & consumers, starting energy accounting & auditing, securitisation of outstanding dues of CPSUs, grid discipline etc. subsequently, 24 states have constituted SERCs and 20 have issued tarriff orders in the direction of rationalizing the tariffs. States are now better committed towards subsidy payment to the utilities. All the States have securitised. Their outstanding dues towards CPSUs. 13 States have unbundled/corporatised their respective power utilities. Electricity Distribution has been privalized in Orrisa & Delhi.

Progress on metering in the distribution sector is as shown:



ACCLERATED POWER DEVELOPMENT AND REFORMS PROGRAMME

The Govt. of India approved Accelerated Power Development and Reforms Programme (APDRP) in March 2003 with a focus on distribution reforms with the following objectives:

- Reduce AT&C losses
- Bring about commerical viability in the power sector
- Reduce outages & interruptions
- Increase consumer satisfaction

The programme has an outlay of Rs. 40,000 Crore as additional central plan asistance to State Governments during Tenth five-year plan. The programme has two components

Investment Component

Additional Central Plan Assistance is provided by the Government to the states for undertaking projects for strengthering and up gradation of Sub Transmission and Distribution network for reduction in technical and and commercial losses and feeder outages and better reliability & increased customer satisfaction and to bring commercial vaibility to the power sector. The focus is on high-density networks i.e. urban centres, where investment could lead to substantial, quick & demonstrable results.

25% of the project cost is provided as Additional Central Plan Assistance in the form of grant to the state utilities. To begin with, the Government also provided loan to the tune of 25% of the project cost. However, in accordance with the recommendations of 12th Finance Commision, the loan component has been discontinued from the current financial year. Now utilities have to arrange remaining 75% of the project cost from Financial Institutions like PFC/REC or their internal resources, in comparision to 50% earlier. Special category states (All North Eastern states, J&K, H.P., Uttaranchal and Sikkim) are entitled for 90% assistance in the form of grant and have to arrange balance 10%. Funds are released by Ministry of Finance, Government of India under the advice form Ministry of Power.

The investment component has an expected outlay of Rs. 20,000 Crore during Tenth Plan.

The status as on 30th November 2005.

Number of Projects sanctioned	583 Nos.
Cost of projects sanctioned	Rs. 19182.33 Cr.
Funds released	Rs. 5872.32 Cr.
Counter - Part funds tied up	Rs. 6870.41Cr.
Counter-Part funds drawn	Rs. 3700.27 Cr.
Funds Utilized	Rs. 8550.52 Cr.

Incentive Component :

The incentive component has been introduced to motivate the SEBs/Utilities to reduce their cash losses. Funds are provided to SEBs/utilities for actual cash loss reduction by

way of one for two matching grants. FY 2000-01 has been fixed as base year. Expected outlay under the incentive component is Rs. 20,000 Crore. The Minstry has appointed M/S CARE and M/S ICRA for third party scrutiny of the incentive claims of the utilities.

The details of the reported cash loss reduction and incentives released by the Central Govt. to various states under APDRP are as under:

(Rs. in crores)

Sl. No.	Name of States	Year	Reduction in cash losses	Incentive Released
1.	Andhra Pradesh	2002-03	530.22	265.11
2.	Gujarat	2001-02	472.76	236.38
		2002-03	296.16	148.03
3.	Haryana	2001-02	210.98	105.49
4.	Kerala	2002-03	129.88	64.94
5.	Maharasthra	2001-02	275.78	137.89
6.	Rajasthan	2001-02	275.42	137.71
7.	West Bengal	2002-03	146.00	73.00
		2003-04	605.52	302.76
		Total	**2942.72**	**1471.36**

APDRP is an instrument to leverage distribution reforms in the States. The States were asked to commit a time-bound programme of reforms as elaborated in the Memorandum of Understanding (MoU) and Memorandum of Agreement (MoA). States have to take administrative and commercial steps in addition to the technical interventions, which will help them in efficiency improvement in the sector. The Ministry is closely monitoring the progress of states on activities committed under MOA and implementation of APDRP projects directly and through National Thermal Power Corporation (NTPC) and Power Grid Corporation of India Ltd (PGCIL), who are working as Advisor-cum-Consultant to the states. As required under MoA, states have also constituted Distribution Reforms Committees in their respective state for reviewing and monitoring of progress on reforms and implementation of APDRP schemes.

The states are now better focussed on reducing theft and pilferage of the electricity. The anti-theft provisions of Electricity Act 2003 are being implemented and the utilities are now more vigilant. As a technical intervention, utilities have introduced HVDS for arresting power pilferage and reduciton of Technical losses.

For reducing technical loss and improvement in availability and reliability of power supply, long 11kV and LT feeders are being bifurcated and augmented. Similarly, new distribution transformers are being installed and power transformers are being augmented to reduce overloads. R&M of substation and DTs is being undertaken for modernisation/upgradation of old equipment, which will result in better service. The utilities have also started adopting information technology in the distribution sector mainly in metering, billing, revenue realisation and complaint handling. This is resulting in reduced human intervention leading to better efficiency and increased consumer satisfaction.

The state of Assam, Karnataka, Orissa, Nagaland and West Bengal have adopted different models of franchisees for electricity distribution. The system has shown considerable improvement in the revenue collection and services to the consumers. Other states are also in the process of finalising suitable model for respective states.

Out of 583 projects sanctioned progressively since 2002-03, 26 projects have achieved 100% utilization and other 197 projects have achieved between 50% and 100%. states, which have made good progress in implementation of APDRP projects, are Andhra Pradesh, Delhi, Gujarat, Karnataka, Tamilnadu and Sikkim. The towns covered under APDRP, where utilization is more than 50% have in general shown improvement in AT&C loss. 313 APDRP towns have shown reduction in AT&C loss in comparison to the base year. 158 towns in various states as shown below have reported AT&C loss less than 15%

No. of Towns with <15% AT&C Loss

• Andhra Pradesh	:	99 Towns
• Chhattisgarh	:	01 Town
• Gujarat	:	05 Towns
• Himachal Pradesh	:	03 Towns
• Karnataka	:	10 Towns
• Madhya Pradesh	:	01 Town
• Maharashtra	:	06 Towns
• Punjab	:	04 Towns
• Rajasthan	:	03 Towns
• Tamilnadu	:	25 Towns
• Tripura	:	01 Town

Further, 38 towns as shown below have achieved AT&C loss between 15 to 20% as under

S.No.	State		No. of Town
1	Chhattisgarh	:	1
2	Gujarat	:	6
3	Goa	:	1
4	Himachal Pradesh	:	3
5	Karnataka	:	12
6	Kerala	:	4
7	Maharashtra	:	4
8	Punjab	:	3
9	Tamilnadu	:	3
10.	Uttar Pradesh	:	1
	Total	**:**	**38**

The overall commercial loss (without subsidy) of the Utilities was Rs. 27.069 crores during 2001-02 and was expected to reach Rs. 40,000 crores by 2005-06 as per the estimates of World Bank, were Rs. 22,126 crores during 2004-05. 11 states namely, Andhra Pradesh, Chhattisgarh, Goa, Gujarat, Karnataka, Maharashtra, Orissa, Punjab, Pondicherry, Sikkim and West Bengal have earned cash profit (revenue and subsidy on realised basis). The States which are still incurring heavy loss are Uttar Pradesh, Jharkhand, Bihar, Jammu & Kashmir, Assam, Delhi, Rajasthan, Haryana and Madhya Pradesh.

Chapter - 7

TRANSMISSION

Transmission

Transmission projects continue to be accorded a high priority in the context of the need to evacuate power from generating stations to load centres, system strengthening and creation of National Grid. The construction targets of transmission projects for the year 2005-06 and the achievements up to Dec.'05 are summarised below:

Parameter	MOU Target (Excellent)	Achievement upto December, 2005	% of Achievement
No of Ckt. Kms. ready for commissioning	3,800	4,040	106%
Transformation Capacity addition	4,885	4,670	95.5%

CENTRAL SECTOR TRANSMISSION

Transmission lines and sub-stations completed during the year 2005-06 (upto Dec., 05) are shown in the following table:

S. No.	Name of the line/Sub-station	Voltage Class
Ia)	**TRANSMISSION LINES**	
1.0	Rihand – Allahabad – Mainpuri D/c line	400 kV
2.0	Mainpuri – Ballabgarh D/C ine	400 kV
3.0	Patiala – Malerkotla S/C line	400 kV
4.0	LILO of Nalagarh-Hissar at Patiala & Kaithal D/C	400KV
5.0	Raipur - Chandrapur D/C	400KV
6.0	LILO of Bongaigaon - Malda at Siliguri D/C	400 KV
7.0	Madurai - Thiruvananthapuram D/C	400 KV
8.0	Dhauliganga (NHPC) - Bareilly (UPPCL) D/C (To be initially charged at 220 kV level)	400 KV
9.0	Tarapur 3 & 4 - Boisor D/C Transmission line	400KV
10.0	Tarapur 3 & 4 - Padghe D/C Transmission Line (Ckt-II)	400KV
11.0	LILO of S/C Gandhar - Padghe line at Boisor .	400KV
12.0	Kaiga - Narendra D/C Line	400KV
13.0	LILO of S/C Gandhar - Padghe at Vapi	400KV
14.0	LILO of S/C Nagarjunsagar-Raichur at Mahaboobnagar	400KV
15.0	Meerut (POWERGRID) – Shatabdi Nagar S/c line	220 kV
16.0	Tarapur 3 & 4 - Boisor S/C Tr. Line	220KV
17.0	LILO of D/C Siliguri - Gangtok at Melli	132 KV
18.0	LILO of Ist Ckt of D/C Siliguri - Rangit at Gangtok (New)	132 KV

Ib)	**Other Schemes**	
1.0	ULDC-ER	
2.0	ULDC-WR	
3.0	Series Compansation at Rengali	
II)	**New Sub-Stations**	
1.0	Thiruvananthpuram	400 /220 kV
2.0	Mainpuri	400 /220 kV
3.0	Vapi	400 /220 kV
4.0	Boisor	400 /220 kV
5.0	Kaithal	400 /220 kV
6.0	Patiala	400 /220 kV
7.0	Narendra	400 /220 kV
8.0	Baripada	220/132 kV
9.0	Gangtok	132 /66 kV

TOWARDS FORMATION OF NATIONAL GRID

Ministry of Power has envisaged establishment of an integrated National Power Grid in the country by the year 2012 with an inter-regional power transfer capacity of about 37,150 MW (Enhanced from earlier planned target of 30,000 MW) details at Annexure-I. A perspective transmission plan has been evolved for strengthening the regional grids with ultimate objective of establishment of strong & vibrant National Power Grid to support the generation capacity addition program of about 1,00,000 MW during X & XI Plans.

The exploitable energy resources in our country are concentrated in certain pockets. As a result, some regions do not have adequate natural resources for setting power plants to meet the future requirements whereas others have abundant natural resources. This has necessitated the formation of National Power Grid to transmit power from resource rich to deficit area as well as facilitate scheduled/ unscheduled exchange of power.

Further, acquiring Right of Way (ROW) for constructing transmission system is getting increasingly difficult. This necessitates creation of high capacity "Transmission Highways", so that in future, constraints in ROW do not become bottlenecks in harnessing natural resources. It is envisaged to establish such an integrated National Grid in a phased manner by the year 2012, which can support inter-regional transfer of power to the extent of about 37,150 MW. Working towards this plan, POWERGRID has implemented various inter regional schemes and an inter regional power transfer capacity of 9,500 MW is available by Dec., 2005.

PRIVATE SECTOR PARTICIPATION IN TRANSMISSION

POWERGRID has established First Public-Private joint venture in Indian Power Sector with M/s Tata Power (POWERGRID stake 49% and Ms Tata Power stake 51% in the JV Company viz. "Powerlinks Transmission Limited") for implementation of major transmission lines of Transmission system associated with Tala HEP in Bhutan, East-North inter-connector and Northern Region Transmission System, costing about Rs. 1,612 Crore. This project received excellent response from International Funding Institutions like IFC, Washington including multilateral financing from private sector arm of ADB, Manila and Indian Financial Institutions like IDFC, SBI. The JV Company has received its transmission license from CERC, the first such license in Indian Power Sector.

Financial closure of the project was achieved in May' 04. A debt of Rs. 980 Crore has been tied up with the consortium of multilateral and domestic financial institutions.

Action has been initiated to bring in more private investment in transmission projects and two more projects. For example, transmission system associated with Koldam & Parbati-II (Estimated cost: Rs. 660 Crore) have been floated under joint venture route.

In addition, some transmission lines under Western Region Strengthening scheme are envisaged to be implemented through 100% private sector participation (IPTC route).

Ministry of Power is in the process of finalising policy guidelines for private investment in transmission.

Hotline maintenance of EHV line in progress

Chapter - 8

RURAL ELECTRIFICATION PROGRAMME

Rural electrification has been regarded as a vital programme for the development of rural areas. In 1947, only 1500 villages were electrified in India. The per capita consumption was 14 units. The inital focus was on 'electrification for irrigation' to enhance agricultural produce which was reflected in the definition of village electrification accepted till 1997 - that " a village was deemed to be electrified if electricity is being used within its revneue area for any purpose whatsover".

This definition of village electrificaiton was reviewed in consultation with the State Government and State Electircity Boards and following new definition was adopted after 1997 :

"A village will be deemed to be electrified if electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsover."

In February, 2004, the definition was made even more encompassing as also target specific. "A village would be declared electrified if :

(i) Basic infrastructure such as distribution trasformer and distribution lines are provided in the inhabited locality as well as the dalit/ hamlet where it exists. (For electrification through Non-conventional Energy Sources a distribution transformer may not be necessary.)

Dr. Manmohan Singh Hon'ble Prime Minister of India with (L to R) Late Shri P.M. Sayeed former Minister of Power, Smt. Sonia Gandhi Chairperson, UPA and Shri R.V. Shahi Secretary, (Power) at the launch of RGGVY

(ii) Electricity is provided to public places like schools, panchayat offices, health centres, dispensaries, community centres, etc. and

(iii) The number of household electrified should be at least 10% of the total number of household in the village.

Government of India from time to time had launched the following programmes for electrification of rural areas in the country :

i) Rural Electrification under Minimum Needs Programme (MNP)-

This was started in 5th Five Year Plan with rural electrification as one of the components of the programme. Under this programme funds were provided as Central assistance to the states in the forms of partly grants and partly loans. Since the inception of the MNP, the component that relates to rural electrification has been off set against the loan component of MNP. The areas covered under the MNP for the purpose of rural electrification were remote, far flung and difficult villages with low load potential. The scheme has been discontinued form 2004 onwards and has been subsequently merged with the new scheme, Rajiv Gandhi Grameen Vidyutikaran Yojana.

(ii) Pradhan Mantri Gramodaya Yojana (PMGY)-

This scheme was launched in 2000-01 but rural electrification component was added in the Next financial year 2001-02. It was being implemented by State Electricity Boards/Electricity Department/Power Utilities which were designated as implementing agencies. Funds were being released by State Government to the implementing agencies, Funds under the programme were provided to the states as Additional Central Assistance which followed the normal pattern of central assistacne i.e. 90% grant & 10% loan for special category states, 30% grant & 70% loan for other states. The scheme has been discontinued form 2005-06 onwards.

(iii) Kutir Jyoti Scheme

This programme was launched in 1988-89 to provide single point light connections to households of rural families below the poverty line including harijans and adivasi families. The allocation amongst the States was based on the size of rural population below the poverty line ans level of village electrification in the State, with higher weightage given to States having larger population of rural poor and low electrification levels. This scheme has been now merged with RGGVY.

(iv) Accelearted Rural Electrification Programme (AREP)-

The scheme was intorduced in the year 2003-04 under which interest subsidy of 4% was to be provided on loans availed by State Government/Power Utilities form Financial Institutions like Rural Electrification Corporation (REC), Power Finance institutions like Rural Infrastructure Development Funds (RIDF), National Agricultural Bank and Rural Development (NABARD) etc. for carrying out rural electrification programme. The assistance was limited to electrification of un-electrified villages, electrifications of hamlets/dalit bastis/tribal villages and electrification of households in villages throught both conventiaonal and non-conventional sources of energy . Funds were provided on the basis of Net Present Value (NPV) of the interest subsidies applicable on disbursement. The scheme was discontinued in 2004

(v) Accelerated Electrification of One lakh villages and One crore households-

Government of India in 2004-2005 introduced a scheme "Accelerated Electrification of One lakh villages and One crore households" by merging the interest subsidy Scheme - AREP (Accelerated Rural Electrification Programme) and Kutir Jyoti Programme. Under this scheme there was a provision for providing 40% capital subsidy for rural electrification projects and the balance has loan assistance on soft terms from REC. The scheme has now been merged with the new scheme RGGVY.

(vi) Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)-

This Scheme of Rural Electricity Infrastructure and Household Electrification has been introduced in April, 2005 for achieving the National Common Minimum Programme objectives of providing access to electricity to all Rural Households over a period of four years. The Rural Electrification Corporation (REC) will be the nodal agency for the programme.

Under this scheme 90% Capital Subsidy will be provided for rural electrification infrastructure through:-

(i) Creation of Rural Electricity Distribution Backbone (REDB) with one 33/11 kV (or 66/11 kV) substation in every block where it does not exist.

(ii) Creation of Village Electricity Infrastructure (VEI) for electrification of all unelectrified villages/habitations and provision of distribution transformer(s) of apppropriate capactity in every village/habitation.

(iii) Decentralized Distributed Generation (DDG) and Supply System form conventional sources for Villages/ Habitations where grid supply is not cost effective and where Ministry of Non-Conventional Energy Sources would not be providing electricity through their programme(s).

This scheme Inter alia provides for financial assistance for electrification of all unelectrified Below Poverty Line (BPL) households with 100% capital subsidy.

This scheme aims at electrifying all un-electrified villages over a period of four years.

Present Status of Rural Electrification

Till December, 2005, 27 states have Agreements under RGGVY. Projects for 182 districts have been sanctioned at a cost of Rs. 5860.92 crore covering 51037 un-electrified villages and 6472006 rural households which includes 4219415 BPL households. Till November, 2005, 1419 villages in UP and Bihar have been electrified under this scheme. About 10,000 villages have been targeted for electrification of rural households during 2005-06.

To ensure revenue sustainability of the scheme, management of rural distribution will be through franchisees who could be NGOs, Users Association, Corp. or individual entrepreneurs States, as one of the pre-conditions are notifying rural areas under Sec. 14 of Electricity Act, 2003 13 States have notified rural areas so far.

Chapter - 9

ENERGY CONSERVATION

Introduction

India has made rapid strides towards economic self-reliance over the last few years. Impressive progress has been made in the fields of industry, agriculture, communication, transport and other sectors necessitating growing consumption of energy for developmental and economic activities. If India is to achieve the targeted growth in GDP, it would need to commensurate input of energy, mainly commercial energy in the form of coal, oil, gas and electricity. However, India's fossil fuel reserves are limited.

Energy being an important element of the infrastructure sector its availability has to be ensured on sustainable basis. On the other hand, the demand for energy is growing manifold and the energy sources are becoming scarce and costlier. Among the various strategies to be evolved for meeting energy demand, efficient use of energy and its conservation emerges out to be the least cost option in any given strategies, apart from being environmentally benign.

Importance Of Energy Conservation

In a scenario where India tries to accelerate its development process and cope with increasing energy demands, conservation and energy efficiency measures are to play a central role in our energy policy. A national movement for energy conservation can significantly reduce the need for fresh investment in energy supply systems in coming years. It is imperative that all-out efforts are made to realize this potential. Energy conservation is an objective to which all the citizen in the country can contribute. Whether a household or a factory, a small shop or a large commercial building, a farmer or an office worker, every user and producer of energy can and must make this effort for his own benefit, as well as that of the nation.

Energy Conservation Act, 2001

Recognizing the fact that efficient use of energy and its conservation is the least-cost option to mitigate the gap between demand and supply, Government of India has enacted the Energy Conservation Act–2001 and established Bureau of Energy Efficiency under administrative control of Ministry of Power. The mission of BEE is to develop policy and strategies with a thrust on self-regulation and market principles, within the overall framework of the EC Act with the primary objective of reducing energy intensity of the Indian economy.

Bureau of Energy Efficiency have initiated various actions on the thrust areas and moved forward, in establishing institutional mechanisms and infrastructure facilities under the mandate of the EC Act and took steps to involve industries, equipment manufacturers, financial institutions and other stakeholders for implementing the provisions of the EC Act. The various activities undertaken by the Bureau of Energy Efficiency are as follows:

1.Indian Industry Programme for Energy Conservation (IIPEC)

BEE has launched the Indian Industry Programme for Energy Conservation (IIPEC), to assist Indian Industry to improve competitiveness through improved energy efficiency, as well as to enable them to meet the mandatory provisions of the EC Act. IIPEC has provided a forum for cooperation between the Government and industries to work together to explore ways to improve energy efficiency through exchange of information on best practices, to identify energy efficiency potential, establish efficiency targets, implement and manage conservation programmes and to report on the progress.

This voluntary program of sharing of best practices, undertaking and specific energy consumption targets has full acceptance in the 8 sectors of industry including aluminium, cement, chlor-alkali, fertilizer, pulp & paper, petrochemicals, refinery and textile sector. Best practices have been recorded and published through CDs and also incorporated in BEE's website which is being updated periodically for use of designated consumers.

During the current year, Task force Workshop on Energy Conservation in Pulp& Paper(at New Delhi in 31st January,2006) , Petrochemical & Refinery(at IPCL,Vadodara in May 2005) and Aluminium Task force meet (at Hindalco Hirakund in August,2005) were organized by BEE.

2.Demand Side Management (DSM)

Increased electricity end-use efficiency and Demand Side Management (DSM) can mitigate power shortages and drastically reduce need for capacity addition. In this

regard, DSM and EE pilot projects have been designed for Maharashtra and Karnataka First pilot DSM project on lighting has been initiated by BESCOM, Bangalore. A compendium giving DSM measures suitable for India, project design and role of regulators & utilities has also been prepared.

3.Standards & Labelling Programme

This programme will initially focus on energy policy issues of energy efficiency improvement in energy consuming appliances by providing this information on comparative basis in the form of energy labels.

The preparatory work relating to standard and labeling program of electrical appliances including household refrigerators, window air conditioners, distribution transformers, and fluorescent tube lights ballasts has been initiated. Scheme for empowering manufacturers to affix energy labels on voluntary basis to be issued by BEE by June, 2006. for two products (household frost free refrigerator and FTL).

4.Energy Efficiency in Buildings and Delivery Mechanisms for Energy Efficiency Services

Bureau of Energy Efficiency has undertaken Energy audit studies in 8 Government buildings to set up an example for private buildings to pursue similar efforts. The buildings included - Rashtrapati Bhawan, Prime Minister's Office and Defence Ministry blocks in South Block, Rail Bhawan, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, R&R Hospital, Terminal I, Terminal II and Cargo Sections of Delhi Airport, and AIIMS. Energy savings potential between 23 to 46 % has been identified in the above buildings.

Energy audit study has been Implemented in Rashtrapati Bhawan. Implementation work in Prime Minister Office ,Sharam Shakti Bhawan and Transport Bhawan is under progress. 16 more Government buildings are being taken up in second phase for energy auditing and its implementation through ESCO mode

Summary of Energy Audit of Government Buildings

Building particulars	Annual Energy Consumption (Lakh kwh)	Annual Energy Savings (Lakh kwh)	% Savings (kwh)	Annual Energy Savings (Rs. Lakhs)	Investment (Rs. Lakhs	Payback period (Years)
PMO	8.3	2.7	32	16.9	50.5	3
Rashtrapathi Bhawan	34.1	7.8	23	49.9	51.2	1
Sanchar Bhawan	25.6	11.9	46	76	147.1	1.9
Shram Shakti & Transport Bhawan	20.4	8	39	42.9	157.5	3.7
RR Hospital	100	28.8	28	88.3	44.9	0.5
Air Port	713	145	20	586	810	1.5
Rail Bhawan	23.5	6	25	40	163	4.2
AIIMS	369	93.1	29	712	1070	1.5

5. Energy Conservation Building Codes

Energy Conservation Building Codes (ECBC) are to be prepared for each of the six climatic zones of India for notified commercial buildings. The codes will cover energy efficiency aspects of building envelope, heating, ventilation and air conditioning (HV AC) system; lighting system; electric power and distribution system, and service water heating and pumping system.

ECBC structure and analysis methodology has been prepared. Data collection and stringency analysis has also been completed and the first draft of ECBC for stakeholder review is ready

6.Professional Certification and Accreditation

To strengthen the energy management and energy auditing capabilities in the country, Second National Certification examination for Energy Managers and Energy Auditors

has been successfully conducted by BEE in 2005 in 23 centers all over the country. To assist candidates, Course books and question bank were also prepared by BEE and uploaded on Bureau's web sites www.bee-india.com & www.energymanagertraining.com .1156 Certified Energy Auditors and 512 Certified Energy Managers are in place.

Further,64 energy auditing agencies have been cleared for accreditation on the bases of their energy auditing capabilities and institutional set up. These auditors have carried out over 2000 energy audit studies during 2003-05

7 .Development of Energy Performance Codes

Draft code on 7 Technologies (Equipment) Lighting Systems; Dryers; Cogeneration Plants; Electric Motors; Electric Transformers; Fluid piping systems (network) ,insulation and Air Conditioners/Chillers (HVAC) have been prepared. Performance codes would provide a definite method of field-testing of utility equipment in the designated consumer premises. The energy performance codes would improve credibility of energy audits & provide industry and energy managers as to what to expect from the energy audit.

8. Notification of Designated Agencies

27 States Governments and union Territories have notified State level Designated Agencies for the purpose of implementing the EC Act within the state, which are as under:

List of Designated Agency to coordinate, regulate and enforce the provisions of Energy Conservation Act 2001

i. Andaman and Nicobar UT: Electricity Department, UT of Andaman and Nicobar, Port Blair;
ii. Andhra Pradesh:Non-Conventional Energy Development Cooperation of Andhra Pradesh Ltd. (NEDCAP);
iii. Arunachal Pradesh:Arunachal Pradesh Energy Development Agency (APEDA);
iv. Assam: Electricity Department, Government of Assam, Guwahati;
v. Bihar: Bihar Renewable Energy Development Agency (BREDA), Bihar
vi. Chhattisgarh: Chhattisgarh State Renewable Energy Development (CREDA), Raipur;
vii. Delhi: Delhi Transco Limited, Delhi
viii. Gujarat: Gujarat Energy Development Agency (GEDA), Gujarat
ix. Haryana: Department of Non-conventional Energy Sources (DNES), Chandigarh;
xi. Himachal Pradesh: Director (Enforcement & Energy Audit), Office of the Chief Engineer (Commercial), H.P. State Electricity Board, Shimla;
xi. Jharkhand: Chief Engineer-cum-Chief Electrical Inspector, Energy Department, Government of Jharkand, Ranchi;
xii. Karnataka: Karnataka Renewal Energy Development Limited (KREDL);
xiii . Kerala: Energy Management Centre, Kerala, Thiruvananthapuram;
xiv. Lakshadweep UT: Department of Electricity, Union Territory of Lakshadweep, Kavaratti;
xv. Madhya Pradesh: M.P.Urja Vikas Nigam Limited (MPUVNL);
xvi. Maharashtra: Maharashtra Energy Development Agency (MEDA), Pune;
xvii. Mizoram: Chief Engineer (Power), Power & Electricity Department, Government of Mizoram, Mizoram;
xviii. Nagaland:Electrical Inspectorate, Department of Power, Government of Nagaland, Kohima.
xix. Orissa: Electricity-cum-Principal Chief Electrical Inspectorate, Bhubaneswar
xx. Pondicherry: Executive Engineer, Division-II, Electricity Department, Pondicherry;
xxi. Punjab: Punjab Energy Development Agency, Chandigarh;
xxii. Rajasthan: Rajasthan Renewable Energy Cooperation, Jaipur;
xxiii. Tamil Nadu: Electrical Inspectorate Department, Chennai
xxiv. Tripura: Department of Power, Tripura, Agartala;
xxv. Uttaranchal: Electricity Safety Department, Government of Uttaranchal, Haldwani;
xxvi. Uttar Pradesh: Uttar Pradesh Power Corporation Ltd., Uttar Pradesh;
xxvii. West Bengal: West Bengal State Electricity Board, Kolkata;

9. National Energy Conservation Awards

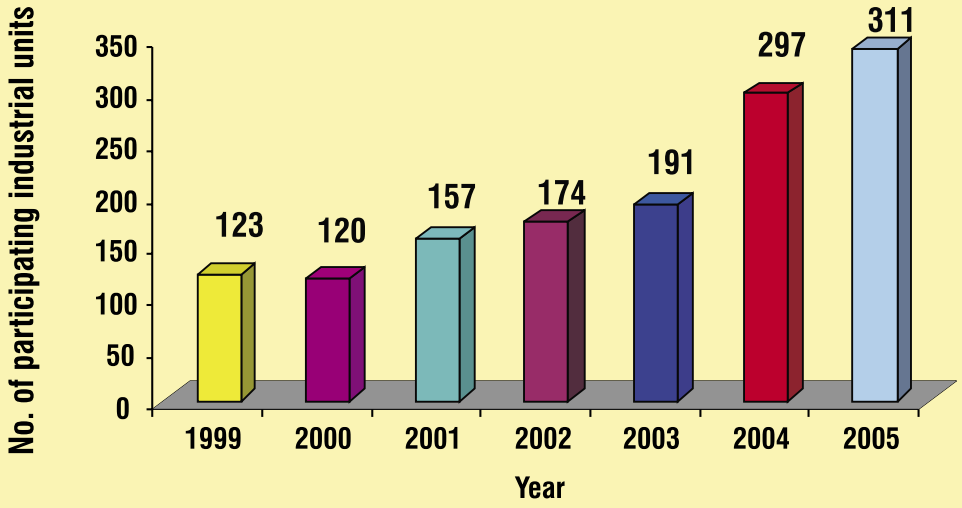
Industrial units have been motivated through National Energy Conservation Award scheme. In EC Award 2005, 311 participating industrial units saved Rs. 9891 million per year against an investment of Rs. 13161 million, on account of implementation of various energy conservation projects. Electricity savings achieved by the participating industrial units resulted in saving in avoided capacity equivalent to 250 MW. Response from the first time introduced schemes for Government Buildings and Commercial Buildings (Private Sector) was also encouraging. In total, 32 buildings establishment participated (16 each in both types of establishments) and collectively saved Rs.36 million.

Dr APJ Abdul Kalam, President of India with the prize winners of the Painting Competition for children at the National Energy Conservation Day 2005

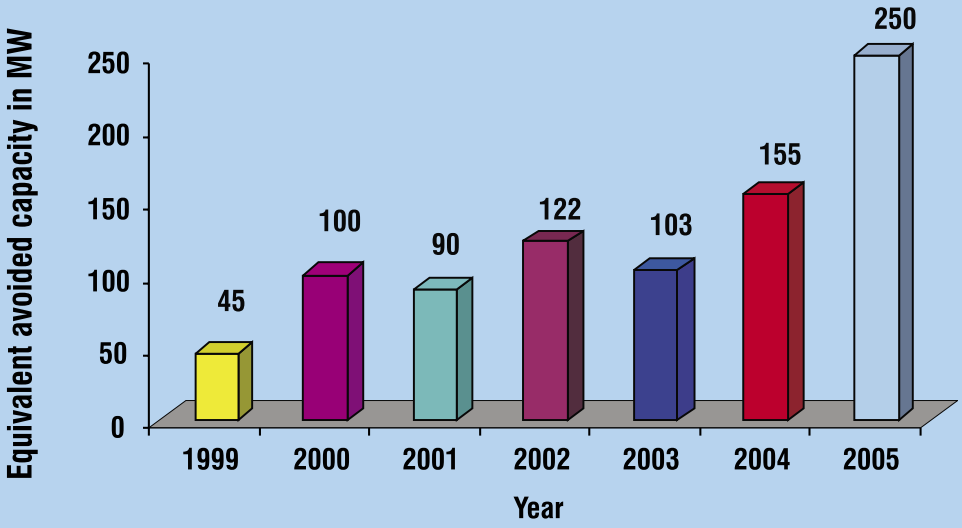
SUMMARY OF ENERGY SAVINGS ACHIEVED BY INDUSTRIAL UNITS PARTICIPATING IN MINISTRY OF POWER'S ENERGY CONSERVATION AWARD SCHEME 1999, 2000, 2001, 2002, 2003, 2004 & 2005)

Year	No. of Participating Units	Savings in Rs. Crores	Investment in Rs. Crores	Electrical Energy Saving		Furnace Oil Savings in Lakhs KL	Coal Savings In Lakh Metric Tonnes	Gas Savings in Lakh Cubic Metres
				Million KWH	Equivalent Avoided Capacity in MW			
2005	311	989	1316	1316	250	2.40	7.58	13122
2004	297	763	1364	814	155	2.49	5.37	18585
2003	191	539	1071	542	103	2.21	12.65	73181
2002	174	594	691	641	122	1.7	7.4	35588
2001	157	587	659	485	90	2.21	4.79	3929
2000	120	366	630	524	100	1.327	0.64	707
1999	123	205	940	205	45	1.62	2.15	2444
Total 7 Years		**4,043**	**6,671**	**4,527**	**865**	**13.957**	**40.58**	**1475,56**

Encouraging response from Indian Industry in the EC Award Scheme (1999-2005)



Electrical Energy Savings, equivalent avoided capacity in MW



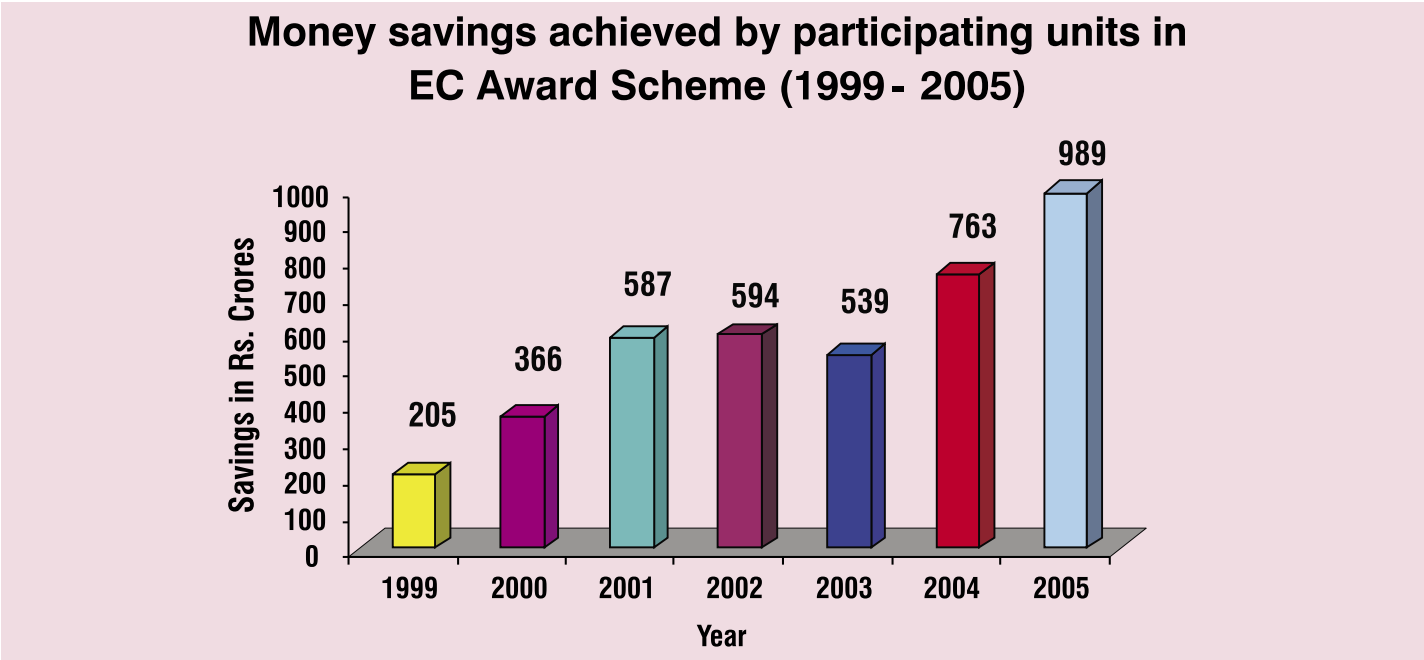
ANNUAL ACHIEVEMENT OF GOVERNMENT BUILDINGS PARTICIPATING IN THE AWARD SCHEME IN THE YEAR 2004-2005

1. MONETARY SAVINGS

Savings	:	Rs. 158 lakhs (Rs. 1.58 Crores)
Investment	:	Rs. 234 lakhs (Rs. 2.34 Crores)
Average payback period	:	1.5 years

2. ENERGY SAVINGS

Electricity	:	20 lakhs kWh (or Avoided Capacity equivalent to a 0.4 MW Thermal Power Station



ANNUAL ACHIEVEMENT OF COMMERCIAL BUILDINGS PARTICIPATING IN THE AWARD SCHEME (Private Sector) IN THE YEAR 2004-2005

1. MONETARY SAVINGS

Savings : Rs. 203 lakhs (Rs. 2.03 Crores)

Investment : Rs. 115 lakhs (Rs. 1.15 Crores)

2. ENERGY SAVINGS

Electricity : 91 lakhs kWh (or Avoided Capacity equivalent to a 1.73 MW Thermal Power Station

10 .National Campaign on Energy Conservation 2005

On 14th December, 2004, the Hon'ble Prime Minister of India, Dr. Manmohan Singh launched the National Campaign on Energy Conservation, under which various measures, activities were undertaken during 2005 by Ministry of Power through Bureau of Energy Efficiency, State Governments and Designated Agencies, Public Sector units of Ministry of Power, Industries, Schools, etc. The national campaign on energy conservation included the following activities in the industrial, commercial, agricultural and domestic sectors and educational institutions.

1. Spreading information about simple energy saving methods that can be applied in everyday life.
2. In terms of the communication strategy, print and electronic media and campaign events were undertaken to create energy conservation awareness effectively and rapidly among the audience nationwide at the initial stage.
3. Publications/brochures were brought out to create publicity on wider variety of energy conservation methods to improve energy consumption behavior, including prevention of energy waste and leakage

The National Campaign has targeted various sectors of the economy and special emphasis has been given for active involvement of the children and the youth thereby forming the energy saving habit from childhood. A total of 207 activities were undertaken in this campaign.

Sector wise activities – January to December 2005 (under National Campaign on EC)	
Industrial Sector	77
Commercial Sector	34
Domestic Sector	40
Agriculture Sector	10
Educational Institutions	46
Total Activities	**207**

State wise activities – January to December 2005 (under National Campaign on EC)	
Tamil Nadu	7
Maharashtra	36
Gujarat	26
Uttar Pradesh	13
Kerala	5
New Delhi	34
Haryana	18
Andhra Pradesh	6
Orissa	5
Madhya Pradesh	5
Karnataka	5
Assam	9
Bihar	2
Rajasthan	3
West Bengal	11
All India	22
Total	**207**

11.Painting Competition of Energy Conservation

A painting competition was conducted for schoolchildren for 4th and 5th standards, at School, State and National level as a part of the Campaign which has not only made aware the children about the need of conserving energy but at the same time educated and involved their parents as well in the above cause.

The painting competition was conducted at three levels - School, State and National level. The activity was implemented with the support of BEE and CPSUs under Ministry of Power. About 3.43 lakhs students participated across the country.

Principals of participating school conducted the painting competition at school level and selected two best paintings and sent them to the state nodal officials to be considered for participation at State level competition.

Juries constituted at State/UT level selected 50 best students in each State/UT for their participation at the State /UT level Painting Competition on 14th November 2005 at the capital city of the concerned State/UT. The State / UT Level Painting Competition held on 14th November 2005 was a grand success and the paintings drawn by children reflected their interest in the energy conservation activities and their concern about energy crisis. Hon'ble Governors of three states and Hon'ble Chief Ministers of four states

One of the Prize Winning Paintings at the Energy Conservation Day 2005

Award winning Paintings at the Energy Conservation Day 2005

graced the prize distribution functions. The event was very well covered in the print and electronic media .

1st and 2nd winner of state level painting competition were invited to Delhi to participate in National Level Painting Competition held in Delhi on 11th December 2005. Awards to the winner of National Level Painting Competition were given away by H.E. the President of India.

Milestones Achieved in National Campaign on Energy Conservation-2005

- Secured the support of 75 industrial and commercial units in the campaign
- 117 Seminars, Workshops and Training Programmes on Energy Conservation organized (2700 participants)
- Opportunity provided to 8400 students to visit industry and make them aware about the Energy Conservation practices and methods adopted by the Indian Industry;
- 17560 Schools and 3.43 lakhs students of 4th & 5th standard participated in the School Level Painting Competition on Energy Conservation in 35 States/UTs
- 44 Industrial units and hotels declared their Energy Policies bringing in the top management commitment
- New Award Scheme for Government Buildings and Commercial Buildings launched and executed

Dr. APJ Abdul Kalam, Hon'ble President of India with Participants & Award Winners of the Children's Painting Competition on the National Energy Conservation Day 2005

Chapter - 10

RENOVATION AND MODERNISATION

RENOVATION AND MODERNISATION OF THERMAL POWER STATIONS

Introduction

In order to improve the performance of existing Thermal Power Stations, a Renovation and Modernisation (R&M) Programme called Phase-I R&M Programme was launched by the Government of India all over the country in September 19 84 for completion during the Seventh Plan Period. This programme was successfully completed and intended benefits were achieved.

R&M (Phase-II) Programme

In view of the encouraging results achieved from the Phase-I programme, the Phase-II programme for R&M of 44 thermal power stations was taken up in the year 1990-91. Power Finance Corporation (PFC) was assigned to provide loan assistance to the State Electricity Boards for R&M works. All the schemes were identified by the Roving teams comprising engineers from CEA, BHEL and concerned utilities. An expenditure of Rs.862 crores was incurred and an additional generation of 5000 MU/ year has been achieved. Also, the Life Extension works on 4 units (300 MW) of Neyveli Thermal Power Station were completed.

9th Plan Programme

The CEA reviewed the progress of Phase-II R&M Programme and the balance activities still required to be carried out were included in the 9th Plan Programme along with the subsequently identified additional activities. During the 9th Plan Programme, 127 Units (17306 MW) at 29 Power Stations were taken up for R&M and another 25 units (1685 MW) for Life Extension at an estimated cost of Rs.1700 crores.

Life Extension works on all the 25 units planned for 9th five year plan have been completed .

10 th Plan Programme

During the 10th plan, 106 old thermal units with a total capacity of about 10413 MW at an estimated cost of Rs.9200 crores have been identified for Life Extension Works. Out of 106 units, Life Extension works of 8 units have been completed and further action is being taken by concerned SEBs/utilities to carry out the works on remaining units. After implementation of life extension (LE) schemes, the economical operating life of the units will get extended by another 15-20 years besides the overall improvement in the performance of the units. Also R&M works on 57 units (14270 MW) at an estimated cost of Rs.977 crores have been identified for improvement of their performance.

Programme for the year 2005-06

During the year 2005-06, the work of Life Extension of 3 thermal units (230 MW) are expected to be completed, out of which LE work on one unit of Bhantida unit-2(110 MW) have already been completed and the works on Ennore unit- 1&2 (2x60MW) are in the advance stages of completion.

RENOVATION AND MODERNISATION OF HYDRO ELECTRICAL POWER RPOJECTS

a) R&M Phase-I Programme

Based on recommendations of the National Committee set up in 1987 and subsequent review, a programme for renovation, modernization and uprating of Hydro Power Stations was formulated by Central Electricity Authority in which 55 schemes were identified with an aggregate installed capacity of 9653 MW. The total cost of these schemes was estimated at Rs. 1493 Crores and expected benefit as 2531 MW. The number of these schemes was, thereafter, reduced from 55 to 50 since six schemes were dropped and one scheme has been split into two schemes. Out of the remaining 50 schemes, work on 35 schemes having an aggregate installed capacity of 5893.65 MW has been completed till 31.12.2005 at an actual cost of Rs. 918.64 Crores and a benefit of 1826.98 MW has been achieved.

b) R&M Phase-II Programme

As per the hydro policy declared in 1998, renovation & modernization of Hydro Power Plants have been accorded priority. Accordingly, 67 hydro RM&U schemes having an aggregate installed capacity of 10318 MW were identified to be undertaken under Phase-II programme till the end of Xth Plan to accrue a benefit of 3685 MW at an estimated cost of Rs. 2161 Crores. Out of these 67 schemes, 4 schemes having an aggregate installed capacity of 591.40 MW have been completed during the IXth Plan at an actual cost of Rs. 113.35 Crores and have yielded a benefit of 48.40 MW. Further, 15 schemes having an aggregate installed

capacity of 2146.80 MW have been completed during the Xth Plan till 31.12.2005 at an actual cost of Rs. 524.07 Crores and a benefit of 259.80 MW has been achieved.

c) National Perspective Plan

National Perspective Plan was formulated by C.E.A in the year 2000 including the R&M proposals under Phase-II programme along with the left out schemes of the National Committee (Phase-I programme) which were under implementation/yet to be implemented at that time. This Plan indicated a benefit of about 7755 MW during the IXth, Xth and XIth Plans through R&M of 117 schemes having an aggregate installed capacity of 19370 MW at an estimated cost of Rs. 4654 Crores.

d) Revised Xth, XIth & XIIth Plan Programmes

The status of hydro R&M schemes, identified by CEA under the National Perspective Plan and later on, is being regularly discussed with the concerned utilities during the annual review meetings convened by C.E.A and has been revised in totality in May/June,2005. According to the Revised Xth/XIth/XIIth Plan programme, a total of 47 schemes (5 in Central Sector and 42 in State Sector) are programmed for completion during the Xth Plan. 59 schemes (8 in Central Sector and 51 in State Sector) are programmed for completion during the XIth Plan. 5 schemes (State Sector) have been shifted to the XIIth Plan.

e) Plan-wise summary of hydro R&M schemes (as on 31.12.2005)

Sl. No	Plan Period	No.of Projects			Installed Capacity (MW)	Cost (Rs. in Crs.) (MW)		Benefit
		Central	State Sector	Total Sector		Estimated	Actual	
1.	**UptoVIIIth Plan** (Projects completed)	2	11	13	1282.00	125.57	127.37	429.00
2.	**IXth Plan** (Projects completed)	8	12	20	4892.10	597.84	570.1612	1093.03
3.	**Xth Plan**							
	i) Projects programmed (Revised)	5	42	47	7449.20	1613.48	-	1012.08
	ii) Projects completed	3	18	21	2457.75	774.09	821.7169	613.15
	iii) Projects ongoing	2	24	26	4991.45	839.39	208.691 (till date)	398.93
4.	**XIth Plan**							
	i) Projects programmed(Revised)	8	51	59	10325.40	3116.402	-	5461.18
	ii) Projects ongoing	3	10	13	4196.60	984.10	124.91 (till date)	1625.60
	iii) Projects yet to commence	5	41	46	6128.80	2132.302	-	3835.58
5.	**XIIth Plan**							
	i) Projects programmed & yet to commence	-	5	5	390.00	166.99	-	317.50

f) Programme for the year 2005-06

As per the revised Xth Plan programme, the following 9 schemes having an aggregate installed capacity of 1761 MW, are programmed for completion during the year 2005-06 to accrue a benefit of 148 MW at an estimated cost of Rs. 269.59 Crores.

S.No. Name of Scheme(I.C. in MW),Agency

1. Anandpur Sahib (4x33.5),PSEB
2. Mukerian, St.I (3x15), PSEB
3. Chibro (4x60), UJVNL
4. Chilla(4x36), UJVNL
5. Bhadra(1x2), KPCL
6. Sharavathy, Ph-A(10x103.5), KPCL
7. Papanasam(4x7), TNEB
8. Mettur Dam(4x10), TNEB
9. Hirakund-I, U 3&4(2x24), OHPC

g) Achievement during the period 1.4.2005 to 31.12.2005

The following 3 schemes having an aggregate installed capacity of 78 MW have been completed during the year 2005-06 till 31.12.2005 at an actual cost of Rs. 117.86 Crores against the estimated cost of Rs. 156.48 Crores to accrue a benefit of 98 MW.

Sl. No. Name of Scheme(I.C. in MW), Agency

1. Bhadra(1x2 MW), KPCL
2. Papanasam(4x7 MW), TNEB
3. Hirakund-I, U-3&4 (2x24 MW), OHPC

h) Programme for the remaining period of the year 2005-06 i.e. from 1.1.2006 to 31.3.2006

The following 6 schemes having an aggregated installed capacity of 1638 MW are programmed for completion during the remaining period of the year 2005-06 to accrue a benefit of 50 MW at an estimated cost of Rs. 113.11 Crores. Works on these 6 schemes are in advanced stages of completion.

Sl. No. Name of Scheme(I.C. in MW), Agency

1. Anandpur Sahib (4x33.5),PSEB
2. Mukerian, St.I (3x15), PSEB
3. Chibro (4x60), UJVNL
4. Chilla(4x36), UJVNL
5. Sharavathy, Ph-A(10x103.5), KPCL
6. Mettur Dam(4x10), TNEB

Chapter - 11

PRIVATE SECTOR PARTICIPATION IN POWER SECTOR

The first major step towards encouraging private investment in the Power sector was taken in 1991 by providing a legal frame work through an amendment of the then existing Electricity (Supply) Act, 1948 enabling private sector participation in generation. Subsequently, a definite tariff framework was also put in place through notification issued by the Government of India.

A. MAJOR POLICY INITIATIVES TAKEN TO STREAMLINE THE PROCESS OF PROJECT DEVELOPMENT

i) Captive Power Plants

Under the Electricity Act, 2003, captive power plants, including group captive, have been freely permitted. The Act provides that any person may construct, maintain or operate a captive generating plant and dedicated transmission lines. Further, under the provisions of the Act, every person, who has constructed a captive generating plant and maintains and operates such plant, shall have the right to open access for the purposes of carrying electricity from his captive generating plant to the destination of his use subject to the availability of transmission capacity.

ii) Open access to transmission

Under the provisions of the Electricity Act, 2003, open access in transmission has been introduced to promote competition amongst the generating companies who can now sell to different distribution licensees across the country. Open access has been made available to captive generating plants subject to availability of transmission capacity. Open access to distribution networks is to be introduced by the respective State Commissions not later than five years from the date of commencement of the Act, i.e. from 10.6.2003, for enabling bulk consumers to buy directly from companies.

Shri Sushilkumar Shinde Hon'ble Minister of Power with Shri R.V. Shahi, Secretary (Power) and other dignitaries at the launch of Sasan & Mundra Ultra Mega Power Projects, at FICCI auditorium, New Delhi

iii) No Techno-Economic Clearance for thermal generation

Generation has been delicensed under the Electricity Act, 2003. The requirement of Techno-Economic Clearance of CEA for thermal power plants has also been done away with. The intention is to provide enough freedom and flexibility in the system for promoters of power plants to put up generating stations. The Regulatory Commissions would ensure that the tariffs are competitive and reasonable. This is a continuation of the policy where tariff based bidding for new IPPs has been prescribed. The objective is to get lower tariffs by promoting competition in the new liberal framework in place of the earlier system of centralised planning and detailed cost scrutiny by the CEA. Under Section 8 of the Electricity Act, 2003, any generating company intending to set up a hydro generating station is required to obtain concurrence of the CEA for the scheme wherever the scheme is estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government, from time to time, by notification.

iv) Setting up of Mega Power Projects:

To facilitate setting up of large sized thermal power plants in the country and in order to derive the economies of scale, the Ministry of Power issued guidelines in November, 1995, for setting up of mega power projects. Power projects having a capacity of 1000 MW or above and supplying power to more than one State were defined as Mega projects. After considering the experience of this policy, the policy was revised in November 1998. Under the revised policy, specific Inter-state and Inter-regional mega power projects were identified for being developed both in the public as well as private sector. A Power Trading Company (PTC) has been established to purchase power from the private sector mega projects and sell it to the beneficiary States. The policy has been further liberalized and with effect from 1.3.2003, all inter-state projects with a capacity of 1000 MW and above for thermal and 500 MW and above for hydel projects are being treated as mega power projects subject to fulfilment of required conditions and would be extended the concession of 'Zero' customs duty on import of capital goods. In order to ensure that domestic bidders are not adversely affected, price preference of 15% is to be given for the projects under the public sector, while deemed export benefits as per the EXIM policy would be given to domestic bidders for projects under public and private sector. In addition, the income tax holiday would be continued with the provision that the tax holiday period of 10 years can be claimed by a promoter in any block of 10 years within the first 15 years. The State Governments are requested to exempt supplies made to mega power plants from sales tax and local levies.

v) Automatic approval for Foreign Direct Investment (FDI)

In order to facilitate FDI, automatic approval (RBI route) for 100% foreign equity without any upper ceiling on the quantum of investment is permitted in all sectors of the power sector i.e. generation, transmission & distribution of electricity.

vi) Generating company permitted to distribute electricity in Rural Areas.

Section 14 of the Electricity Act, 2003 allows any generator of electricity to distribute electricity in a rural area without the requirement of any license, subject to compliance with measures as may be specified by the Central Electricity Authority under Section 53. Under the provisions of Section 4 of the Act, the Central Government, in consultation with the State Governments, is to prepare and notify a national policy, permitting stand alone systems (including those based on renewable sources of energy and other non-conventional sources of energy) for rural areas.

vii) Setting up of Independent Regulatory Mechanisms:-

CERC & SERC

Further, to bring about rationalization and transparency in the tariff setting process, the institution of Independent Regulatory commission was created through an enactment in 1998. Under the Electricity Act, 2003, tariff for supply of power by a generating company to a distribution licensee through long term Power Purchase Agreement (PPA), is to be determined by the Regulatory Commission. Tariff for supply involving a short term PPA (one year or less) would not , however, be regulated. Where open access has been allowed to a consumer, he can reach an agreement with his supplier for purchase of electricity and the tariff for such transaction would also not be regulated. More important, under Section 63 of the Electricity Act, 2003, tariff determined through a competitive bidding route complying to prescribed procedures, is also not to be regulated.

The Central Electricity Regulatory Commission (CERC) an independent statutory body with quasi-judicial powers, was constituted on 25th July, 1998 under the provisions of section 76 of the Electricity Act, 2003.

State Electricity Regulatory Commissions have been established under the provisions of the ERC Act 1998 or

under respective State Reforms Acts. These SERCs have been continued under the provisions of Electricity Act, 2003.

So far twenty five states viz. Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Karnataka, West Bengal, Tamil Nadu, Punjab, Delhi, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Himachal Pradesh, Assam, Chhatisgarh, Uttaranchal, Goa, Bihar, Jharkhand, Kerala, Tripura, Sikkim, Jammu & Kashmir and Meghalaya have either constituted or notified the constitution of SERC.

Joint Electricity Regulatory Commission (JERC) has been notified for Mizoram and Manipur. JERC has also been notified for Union Territories (except Delhi).

Twenty SERCs viz. Orissa, Andhra Pradesh, Uttar Pradesh, Maharashtra, Gujarat, Haryana, Karnataka, Rajasthan, Delhi, Madhya Pradesh, Himachal Pradesh, West Bengal, Punjab, Tamil Nadu, Assam, Uttaranchal, Jharkhand, Kerala, Chhattisgarh and Tripura have issued tariff orders.

viii) Appellate Tribunal For Electricity

Under the provisions of Section 110 of the Electricity Act, 2003, the Appellate Tribunal for Electricity has been established at Delhi which will hear appeals against the orders of the Adjudicating Officer or the appropriate Regulatory Commission under the Act. The Tribunal has become operational from 21st July, 2005. The Tribunal comprises of Chairperson & Judicial Member, Judicial Member, 2 Technical Members.

B. RESPONSE FROM THE PRIVATE SECTOR

Private power projects being monitored by Central Government: The response to GOI's energy policy had been initially encouraging. Since 1991, a total capacity of around 7417.21 MW from 39 private power plants has so far been commissioned and another capacity of around 5000 MW from 13 projects is under implementation. However, there have been impediments in achieving the targeted capacity from the private sector. The major impediments to the speedy development of private sector power projects are as follows:

i) Inability of SEBs and State Governments to provide an acceptable payment security. The revenues of the SEBs are not adequate to ensure payments to Independent Power Producers. This is due to irrational tariffs and poor collection efficiencies.

ii) Delay in finalisation of various contracts such as PPA, Fuel Supply Agreement and Fuel transportation Agreement acceptable to all the concerned parties. Protracted negotiations on fuel prices, liquidated charges/damages, risk covering clauses etc have caused delays in many cases.

iii) **Liquid Fuel and Gas constraints:** One of the factors responsible for poor private investments in thermal power generation is the non availability of fuel at competitive rates. Many initial projects under private sector had proposed liquid fuels for power generation so as to get quick returns on their investments but due to volatility of price of naphtha in the international market, projects became unviable and naphtha reswitching over to natural gas. However, the pricing mechanism adopted for natural gas i.e. linking the price of domestically produced gas to international crude is becoming an area of concern now. There is need to expedite the development of indigenous natural gas reserves as well as to rationalize the price of LNG so that more and more private investors are attracted for setting up of gas based power plants in the country.

iv) **Problems in sourcing coal supplies and coal linkages:**

1. Difficult to get Coal Linkages for new Power Projects. Even the linkages being granted are for 80% PLF (Contract Quantity). Out of this the coal companies take guarantee to supply only 80% of Contract Quantity which results into coal required for approximately 64% PLF. This is not sufficient for recovering full Fixed Capacity Charge as per CERC norms (80% PLF).

2. The linkages granted are not from the mines nearest to the Power Plants, which involves long rail transportation thereby increasing the Power Tariff.

There is a need for expediting the coal allocations and supplies for private power developers. There is an enormous mismatch between the requirements of coal for the power sector and the corresponding supplies. This gap between supply and demand is expected to further widen in the coming years, unless immediate steps are taken for capacity augmentation in supply of coal and imports to bridge the shortfall.

v) Court cases in the form of public Interest Petitions etc.

vi) Failure by IPPs to bring in equity upfront.

vii) Withdrawal by equity holders and EPC contractors.

C. RENEWED PRIVATE SECTOR INTEREST IN POWER

i) Enhancing the confidence level of investors:

Government of India has been assisting wherever required, to resolve issues coming in the way of implementation of these projects. The Electricity Act, 2003 creates a liberal framework for power development and has revived interest among private sector as well as the lending institutions for making greater investments in the power sector. Encouraged by the Act and other measures, the financial institutions have indicated availability of sufficient funds for good projects with viable tariffs and sponsored by credible investors.

ii) Close monitoring of IPPs for capacity addition in the 10th Plan-constitution of the Inter-institutional Group.

Ministry of Power has been closely monitoring the power projects in the private sector which are considered possible for early financial closure. An Inter-Institutional Group (IIG) comprising senior representatives from the lenders and Ministry of Power has been constituted to jointly appraise such projects and facilitate financial sanction in a time bound fashion. Thirteen power projects with a total capacity of about 4927 MW have since achieved financial closure and ten more projects with a total capacity of about 11432 MW are being pursued for early financial closure. A Green Channel has been constituted in the Ministry of Power to facilitate statutory clearances and provide online exchange of information between the project developers, Financial Institutions and the Ministry through dedicated websites.

LKPPL Creating Prosperity

Chapter - 12

COOPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

Development of water resources of the common rivers of India and neighbouring countries of Nepal, Bhutan and Myanmar for mutual benefits has been under consideration with these countries. There is regular exchange of electric power between India and the neighbouring countries for the supply of surplus power and meeting power requirements in the border areas. The details of co-operation with neighbouring countries are described below.

Nepal

India has been assisting Nepal in the development of its hydro power potential and four HE schemes viz. Pokhra (1 MW), Trisuli (21MW) Western Gandak (15 MW) and Devighat (14.1 MW) have been implemented with financial and technical assistance from Govt. of India. Three major multi purpose projects in Nepal viz. Karnali, Pancheshwar and Saptakosi are presently under discussions at various levels as mutual benefit projects. Feasibility report of Karnali multi-purpose project (10800 MW) was prepared in 1989. Key parameters of this project are to be finalised after mutual discussions. A Joint Committee on Water resources (JCWR) headed by respective Water Resources Secretaries has been constituted to act as an umbrella committee to ensure implementation of existing agreements, understanding and also to oversee work of all technical and expert level committees related with Water Resources. During 2nd meeting of JCWR held in Oct.'2004, it was decided to initiate consultation for development of Karnali Project. Investigations have been carried out in respect of Pancheshwar MPP (5600 MW) by the two countries in their respective territories. A Joint Project Office (JPO) was established in Kathmandu in Dec., 1999 to carry out additional investigations and for preparation of Detailed Project Report (DPR). The JPO was closed in July, 2002. Draft DPR has been prepared by Indian side which is to be mutually agreed by the two countries. A Joint Group has been constituted in October,2004 for resolution of pending issues. First meeting of this Joint Group was held in Kathmandu in December, 2004. Development of Pancheshwar project is covered under Integrated Mahakali Treaty signed between HMG, Nepal and India in Feb., 1996. India has offered financial and technical assistance for investigation and preparation of DPR of Saptakosi High Dam Multipurpose project and Sun Kosi Storage cum Diversion Scheme. A Joint Project Office has been established on 17.8.2004 in Biratnagar, Nepal for taking up field investigations and studies for preparation of Joint DPR in a period of about 30 months. Besides the above, a number of other projects like Burhi Gandaki (600 MW), and Upper Karnali (300 MW) are also under discussions between India and Nepal. Joint Technical Expert Groups have been constituted for the above projects for guidance for carrying out investigations and preparation of detailed project reports (DPRs).

Bhutan

In Bhutan, Chukha HE Project (336 MW) implemented with Indian Financial and technical assistance and operating in an excellent manner is a shining example of cooperation between the two countries for mutual benefits. Surplus power from the project is being imported by India. In addition, Kurichu HE Project (60 MW) in Eastern Bhutan has also been implemented with Indian financial and technical assistance. Another project viz. Tala HE Project (1020 MW) has been taken up for implementation and is being executed by Tala Hydro-Electric Project Authority(THPA) comprising Indian and Bhutanese Officers and Engineers. Design and Engineering consultancy for the project in respect of electro-mechanical and civil works is being rendered by Central Electricity Authority (CEA), Central Water Commission (CWC) and Water & Power Consultancy Services (WAPCOS). The project is being funded by India through grant and loan and major portion of the power generated will be utilised by India. The project is scheduled for completion by 2006-07. Investigation of Sankosh Multi-purpose Project (4060 MW) has been completed by CWC and DPR prepared by CEA/CWC. In addition, Manas MPP (2800 MW) was reconnoitered by a Joint Indo-Bhutan team and pre-feasibility report was prepared in Aug., 1982. The investigation of the scheme could not be taken up due to objections to the scheme from environmental angle. Investigation of two Hydro-electric projects namely Wangchu (900 MW) and Bunakha (180 MW) have been completed and DPR prepared. Further, S&I for Punatsangchhu HE project stage I (1080MW) is under advanced stage by WAPCOS and its DPR is to be prepared by March 2006. An MOU has been signed between GOI and RGOB for preparation of DPR

for Punatsangchhu HE project stage II (870/1000MW) and Mangdechhu (360/600MW) project in January 2005. The work of preparation of DPR for Punatsangchhu HE project stage II project is proposed to be entrusted to WAPCOS and that of Mangdechhu to NHPC. The MOUs with these organizations for preparation of DPR are proposed to be signed in January, 2006.

Afghanistan

Govt. of India has rendered assistance to Govt. of Afghanistan in the past for development of HE projects. Some of these projects for which services have been rendered by India include Kajakai power project, Lower Helmand valley development project and Khanabad HE project etc.

In addition, India is extending assistance for re-construction/ rehabilitation and completion of Salma dam multipurpose project (3x14MW) through WAPCOS which is proposed to be completed in a period of 48 months.

Myanmar

India had extended assistance for Design and Engineering of Sedawygi HE project (25MW). In addition, Tamanthi HE project (1200MW) has been identified as a mutual benefit project. A technical team comprising engineers from CEA/CWC/NHPC/GSI visited the project site in Nov.,1999. Three Nos. G&D sites have been established by India on Chindwin river.Pre-Feasibility Report of Tamanthi H.E. Project has been prepared by NHPC and submitted in April, 2005. DPR for Tamanthi project is now proposed to be prepared by NHPC for which an MOU is proposed to be signed between NHPC and Govt. of Myanmar.

Uzbekistan and Tajikistan

A delegation from NHPC comprising Director (Technical), Executive Director (Design & Engineering) & Chief Engineer (Planning) visited Uzbekistan in the month of April,2003 and Tajikistan in the month of October,2003 to explore the possibility of setting up small hydro power projects in those countries. Certain projects for development, preparation of DPR and renovation, modernization and up-rating were identified by the delegation and report submitted to Ministry of Power and Ministry of External Affairs. Further action is being taken to pursue these projects and enhance the area of cooperation with these countries.

Cooperation in the BIMSTEC

Cooperation in the BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical & Economic Cooperation) received a boost with the Declaration of the first Summit held on 31.7.04. Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand are member countries. The Summit recognized Energy as one of the priority areas for cooperation.

The Summit agreed to promote sustainable and optimal energy utilization through development of new hydro-carbon and hydro-power projects, inter-connection of electricity and natural gas grid, energy conservation, and renewable energy technologies.

India hosted the first BIMSTEC Energy Ministers Conference on 4.10.05. A Plan of Action for energy cooperation in BIMSTEC was adopted at the Conference. As a follow-up, it has been agreed to set up a BIMSTEC Energy Centre in India.

Chapter - 13

POWER DEVELOPMENT ACTIVITIES IN NORTH EASTERN REGION

There are 7 sanctioned on-going hydro electric projects with a total installed capacity of 3,444 MW as under:

NEEPCO PROJECTS (HYDRO):

(i) Kameng HEP (600 MW), Arunachal Pradesh: Govt approval accorded to this project on 02.12.2004 (at approved estimated cost of Rs.2496.90 crores including IDC of Rs.249.09 crores at March 04 price level.) All major civil works, Hydro Mechanical works & E&M works have been awarded in Dec., 04. M/s SMEC, Australia appointed as consultant on 17.12.2004 for Detailed Design and Engineering Services. Mobilization of men & Machinery and initial works of Adits to Tunnel and excavation of Dam and Power House are in progress. An expenditure of Rs.289.08 crores has been incurred upto November, 2005.

(ii) Tuirial HEP (60 MW): The project was accorded investment approval at an estimated cost of Rs.368.72 crores in July, 1998 with likely completion by 2006-07. This project is under execution with loan assistance from JBIC, Japan. The works are at standstill on the project site due to poor law & order conditions and anticipated high increase in the cost of project. The matter regarding economic viability and continuation of the project is being reviewed in totality. All construction works have been suspended presently. An expenditure of Rs. 244.53 Crores has been incurred upto November, 2005.

NHPC PROJECTS (HYDRO):

(i) Teesta-V (510 MW) : The project has been accorded approval on 11th February, 2000 at an estimated cost of Rs.2198.04 crores, to be executed in Central Sector by NHPC. The project is scheduled to be commissioned in 2006-07. Concreting of Dam and excavation of HRT are in progress. Power House excavation completed. Unit erection works of all the three units are in progress.

(ii) Subansiri Lower(2000 MW): The project has been accorded approval on 9th Sept., 2003 at a cost of Rs.6285.33 crores in Central Sector, to be executed by NHPC. The project is scheduled to be completed by 2010-11. Major Civil Works have been awarded to M/S BGS-SGS-Soma joint venture and L&T Ltd. Order for Electrical works have been awarded to consortium of M/s Alstom Power Hydraulique, France and M/s Alstom Projects India Ltd., New Delhi. Due to delay in issue of formal forest clearance by MOEF & non-diversion of land from State Govt of Arunachal Pradesh, Assam, the start of major works of the project had been delayed. Forest clearance was accorded by MOEF on 12.10.2004. Excavation work of inlet structure of diversion tunnel and power house is in progress.

(iii) Loktak Down Stream (90 MW): The project was accorded investment approval on 10.12.1999 at an estimated cost of Rs.578.62 crores, in Central Sector, to be executed by NHPC. Works are held up due to law and order problem prevailing in the region and non-availability of approach road.

In addition, the following projects are under various stages of processing to be taken up for execution in the N.E. Region and Sikkim:-

STATE SECTOR PROJECTS (HYDRO)

(i) Karbi Langpi (2X50 MW) – Assam: The techno-economic clearance was originally given by CEA in 05/78 and the project was sanctioned for Rs. 36.36 crores (1976 price level) by Planning Commission on 24.9.79.

The project was initially started in the State Sector and could not be completed. The project was then given to Private Sector for execution, i.e., to M/s SPML (M/s Subhash Project and Marketing Ltd) in March,1993. However, much progress could not be made by M/s SPML also. Therefore, the project was again shifted back to State Sector in November, 1996. But owing to subsequent court case by M/s SPML, the works remained suspended for about 3 years and six months till March, 2000, before the work could resume.

The latest estimated cost of the project is Rs.557.42 crores. The project execution had been started in state sector. The supply and erection of generating units is financed through OECF. The supply and part erection of Electro Mechanical Equipment which was done long back, need restoration. The project is expected to give benefits during 10th Plan. The expenditure of Rs.203.05 Cr. has been incurred up to November, 2005. However, the works which were held up in a further intervening period, since June

2003 due to funds constraints have been restarted in December, 2004. Balance works of Dams & Electro Mechanical works are in progress.

(ii) Myntdu (2x42 MW) – Meghalaya: Myntdu HE Project (2x42 MW) is under execution by Meghalaya State Electricity Board. CEA clearance was accorded to this project on 20.09.99 at an estimated cost of Rs.391.33 crores (completion cost at 01/99 PL) with the commissioning target by 10/2006. The Administrative approval is accorded by State Government on 09.06.2003. The Board has started the work on this project w.e.f. 1.11.2001. Environment clearance for the project was accorded on 20.9.2001 while forest clearance was accorded on 19.6.2001. The Main Dam works have been awarded on M/s SEW Construction Company, Hyderabad. Works of HRT awarded to M/s Skanska Cementation (I) Ltd., Kolkata in Feb. 2005. An expenditure of Rs. 67.83 Crores has been incurred up to 10/2005.

Tenth Plan Hydro Projects:

One project, namely Karbi-Langpi, in the state of Assam with a installed capacity of 100(2x50)MW is likely to yield benefit during 10th plan. The project is scheduled to be commissioned in December '2006.

Eleventh Plan Hydro Projects:

16 Number Hydro power projects with installed capacity of 4905 MW have been identified to yield benefits during 11th plan as per the details given below;

Sl. No.	Name of State	No. of schemes	Installed Capacity (MW)	Benefits during 11th plan
1.	Arunachal Pradesh	9	4520	4520
2.	Meghalaya	4	185	185
3.	Mizoram	2	140	140
4.	Assam	1	60	60
	Total	**16**	**4905**	**4905**

Twelveth Plan Hydro Projects:

30 Number Hydro Power projects with an installed capacity of 23072 MW have been identified to yield benefits during 12th plan as per the details given below;

Sl. No.	Name of State	No. of schemes	Installed Capacity (MW)	Benefits during 11th plan
1.	Arunachal Pradesh	18	25612	20612
2.	Meghalaya	2	93	93
3.	Mizoram	3	1635	1635
4.	Assam	7	732	732
	Total	**30**	**28072**	**23072**

Assam Gas based Power Station

Chapter - 14

IMPLEMENTATION OF OFFICIAL LANGUAGE POLICY

MINISTRY OF POWER

The Ministry of Power, its attached and subordinate offices and Public Sector Undertakings, Autonomous bodies, Boards, Societies, Institutions under the administrative control of Ministry of Power have continued their efforts to ensure the effective implementation of the Official Language Policy of the Government and encourage progressively,use of Hindi in day to day official work.

In compliance with the Constitutional and statutory requirements of Section 3(3) of Official Language Act as amended from time to time all documents required to be issued bilingually, are being issued bilingually by the Ministry. Similarly, as per provision of the Official Language Rules, 1976, all communications received in Hindi are essentially replied to in Hindi.

To promote the progressive use of the Hindi through positive competitiveness among the organisations under the administrative control of Ministry of Power, a scheme for awarding Vidyut Rajbhasha Shield is in operation under which offices working in Hindi in 'A, 'B' and 'C' regions are awarded shields.

To encourage book writing originally in Hindi on the subjects related to Power Sector, 'Kendriya Vidyut Pustak Lekhan Puraskar Yojna' is being operationalised.

In compliance with the Official Language Policy, a Hindi fortnight was organized from 14th September, 2005 to 28th September, 2005. During this period various competitions including Hindi Essay Writing, noting & drafting, typing, debate and poetry competition were organized in Hindi for the officers as well as staff of the Ministry, and they participated in them with great enthusiasm, and the winners were awarded certificates and prizes.

With a view to assessing the progressive use of Hindi in the attached and subordinate offices etc under the administrative control of the Ministry, inspections were carried out. Inspection reports of the offices inspected were prepared and necessary directions were issued on the basis of these reports.

Proper guidance was given to the attached and subordinates offices, boards, organizations and public sector undertaking under the Ministry of Power regarding inspections done by Committee of Parliament on Official Language. Meetings of the Official Language Implementation Committee of the Ministry of Power were organized regularly.

CENTRAL ELECTRICITY AUTHORITY

All out efforts are being made to enhance the usage of Hindi in official work in CEA. All incentive schemes sponsored by the Deptt. Of Official Language are in operation in CEA. In addition a Running Shield is awarded to the Division/Section/Unit who does maximum work in Hindi throughout the year. During the year, Rajbhasha Shields were awarded to 12 Divisions/Sections where maximum correspondence is made in Hindi with Regions "A" & "B". Apart from above CEA has introduced a Cash Award Scheme namely Kendriya Vidyut Pustak Lekhan Puraskar Yojna on All India basis to promote original book writing in Hindi from the calander year 2003. Under this scheme winners are awarded with the following prizes:

First Prize	Rs. 50,000/-
Second Prize	Rs. 30,000/-
Third Prize	Rs. 20,000/-

For the Calendar Year 2004 four entries are received and evaluation work is being done. This scheme is also in operation for the year, 2005.

During the year 7 sub-offices of CEA were inspected to assess the usage of Hindi in official work. Official Language Implementation Committee's meeting were held regularly.

Hindi Fortnight was celebrated from 14-9-2005 to 30-9-2005. During this period five Hindi Competitions namely Hindi Essay Writing, Hindi Noting & Drafting, Hindi Technical article writing, Hindi extempore speech and Hindi quiz were organized. Winners of these competitions were awarded Cash prizes along with letter of appreciation on 30.9.2005 in the Hindi Day celebrations.

To create interest in Hindi sufficient number of Hindi Books were purchased for library of CEA. A quarterly Home magazine namely "Vidyut Vahini" is being published by CEA.

During the year 9 Hindi Workshops (5 for officers level and 4 for employees) were organized in which 163 officers

and 80 officials took part. In addition to that one Hindi Computer Training Programme was organized by the Ministry of Power which was conducted by NPTI, Faridabad in CEA Hq. in which 25 employees of Ministry of Power, CGHS and CEA took part.

Officers and employees were regularly nominated for Hindi Language, Hindi Typing and Hindi Stenography training conducted under Hindi Teaching Scheme. Out of 40 Typist 26 were trained and 2 are under training and 12 are still to be trained. In stenography out of 178 employees there are 118 trained and 3 are under training and 57 are still to be trained. In Hindi Language all are trained.

NTPC

In order to ensure proper implementation of Rajbhasha in NTPC, quarterly meetings of Official Language Implementation Committee (OLIC) were organized. Annual Conference of Hindi Officers was organised on 20-21 May, 2005 at Kawas Gas Power Project. Besides, a regional review of Rajbhasha Implementation was also conducted by the members of OLIC, Corporate Centre on 12th August, 2005 at Western Region Headquarter, Mumbai.

NTPC has been entrusted with the task of holding Town Official Language Implementation Committee (TOLIC) meetings of public sector undertakings located in Delhi. So far 64 PSUs are the members of this committee. Last meeting of the committee was held on 21st June, 2005 under the chairmanship of Sh. C.P. Jain, CMD NTPC. Seven PSUs had organised Hindi competitions for the Delhi based PSUs under the aegis of TOLIC and cash prizes were to be given to the winners.

Hindi Pakhwara was organised at all NTPC offices & Stations from 1st September and Hindi Divas was celebrated on 14th September, 2005. At Corporate Centre Hindi books to the tune of Rs. 71,000/- were given to the successful participants of various Hindi competitions. The Hindi Competitions were also organised for the children of our employees. Hindi workshops, departmental inspections were also conducted during the year. Intensive efforts were made to encourage employees for noting and drafting in Hindi. A revised Incentive Scheme for day-to-day use of Hindi and for original Technical writing in Hindi was widely publicized. In addition, several Hindi Cultural programmes were organized to popularize Hindi among employees.

Parliamentary Committee on official language has inspected NTPC Corporate Centre, New Delhi, Northern Region Head Quarter (Lucknow), Rajiv Gandhi Combined Cycle Power Project (Kayamkulam) and Singrauli Super Thermal Power Station and praised NTPC's endeavour everywhere in the field of Rajbhasha implementation and also suggested new measures for further improvement.

NHPC

All out efforts were made to Implement Official Language Policy of the Government of India and to encourage progressively the use of Hindi in day-to-day official work. In pursuance of Government's directives a Hindi Fortnight was observed from September 1 to 14, 2005 in Corporate Office as well as its Projects/offices. During this period various competitions and programmes (like Book Exhibition etc.) were organised. Hindi Patrika 'Rajbhasha Jyoti' was published. Prizes were given to the winners.

Rajbhasha Vibhag of the Corporation carried internal Rajbhaha Inspections out of different departments/ projects/offices. Hindi Language and Hindi typing training classes were held. Hindi workshops were organised to increase the use of Hindi in official work.

SJVN

In order to ensure the implementation of the Official Language Policy of the Govt. of India, all possible efforts have been made by the Corporation to achieve the targets as specified by the Department of Official Language. The organization has bagged a number of awards in recognition of its efforts to implement this policy.

To increase the usage of Hindi in day-to-day work, for imparting training to employees for learning Hindi and Hindi Typing / Stenography various schemes were launched. In addition, Departmental arrangements have been made to impart training for Hindi Typing at Shimla and at Project sites. A number of employees of the Corporation are being trained in Hindi Typing and they also pass the examination conducted by Hindi Teaching Scheme, Govt. of India, on regular basis.

With a view to create awareness among the staff-members for increasing the use of Hindi, a Hindi Fortnight is celebrated every year and various competitions in Hindi are organized. Besides, Hindi quiz competitions are also organized on the Festive Occasions of Republic day, Independence day, Himachal Day & Gandhi Jayanti at corporate level.

DVC

Damodar Valley Corporation implemented all the schemes formulated under Official Language Policy of the Government of India as per the directives received from

the Official Language Department, Ministry of Home Affairs and Ministry of Power, Government of India.

A special drive is going on in DVC to fill in the vacant post of the Hindi Cell. As a result of regular training and with the recruitment of Hindi staff, there has been a remarkable increase in the implementation of Section 3.3 of Official Language Act and Rule - 5 of the Official Language Rules in DVC.

Hindi classes under the Hindi Training Scheme of Government of India are conducted to impart Hindi Training and to develop the working knowledge of Non-Hindi speaking employees of the Corporation. Some of the employees have also acquired the knowledge of Hindi through correspondence courses. As per the Annual Programme, received from the Government of India, Ministry of Home Affairs, Department of Official Language, DVC is striving to attain the target of the training programme during the year, under review. Further, DVC has set the target to complete the Hindi Training by 2008 at Headquarters and in the field formations for those employees who could not complete the programme till now.

Hindi Workshops are being organized regularly to remove the hesitation of Non-Hindi speaking Staff/Officers of DVC for conducting official work in Hindi. During the year under review, till date two Official Language Workshops have been organized in which 40 officers and 40 staff took part.

During 2005 - 2006 (upto November, 2005), Hindi Diwas / Hindi Pakhwara has been organized. Several competitions related to Official Language have been organized to inspire employees for executing their official work in Hindi. On this occasion, Kavi Sammelan has been organized and Departmental Rajbhasha Shield has been awarded to the best department on the basis of using maximum Hindi in official activities.

During the year under review, Damodar Valley Corporation has received a Rajbhasha Shield from CALTOLIC (Undertaking) for its excellent performance in implementation of the Official Language activities. DVC officers and staff have also taken part in the different type of programmes and competitions organized by CALTOLIC. The anticipated target to be achieved by DVC from December, 2005 to March, 2006 includes Hindi training to the employees as per the target fixed on the basis of the action plan, organizing more Workshops on Official Language, purchasing Hindi books as per rule for the Central Library at HQ.

BBMB

Special efforts have been made by BBMB for implementation of Official Language policy of the Union. All the documents under Section 3(3) of the Official Language Act are issued bilingually and letters received in Hindi or signed in Hindi are invariably replied in Hindi. At present about 92% correspondence of Board Secretariat with region 'A' offices and 89% with region 'B' offices is being done in Hindi. Board Website is made available bilingually and discussions in the meetings of Board's High Level Administrative Committees are held in Hindi also and their minutes are issued bilingually.

Meetings of the Official Language Implementation Committee of Board Sectt., are held regularly in which report regarding progressive use of Hindi in any subordinate office of the Board is also reviewed. Almost 50% notings as per the target fixed for 'B' region are done in Hindi.

Bilingual working facilities are available on all computers of the Board. Training in Hindi typing has been imparted to all the English Steno typists/typists/Clerks.

Hindi Library has been set up in Board Secretariat and 50% amount of total expenditure for the purchase of books is being spent for the purchase of Hindi Books for the last four years. Hindi Workshops are organised on quarterly basis and subordinate offices are regularly inspected for effective implementation of official Language.

Hindi fortnight is organized in Board Secretariat every year in the month of September during which various Hindi competitions are held in order to create awareness amongst the Officers and Employees to work in Hindi. Staff members doing considerable work in Hindi during the year are encouraged with cash awards.

All magazines/journals of the Board are published bilingually. Two editions of Board's quarterly house journal 'BHAKRA BEAS SAMACHAR' are published in Hindi only. Besides, 'TAKNIKI SHABDAVALI and 'RAJBHASHA SAHAYAK PUSTAK' has been published and distributed to all employees so that they can work in Hindi in a more convenient and effective manner.

Board Secretariat has been awarded on a number of occasions for excellent performance in Implementation of Official Language policy of the Government by Ministry of Power as well as by Town Official Language Implementation Committee.

PGCIL

POWERGRID, as a company, is sensitive towards it heritage, social and cultural concerns. In pursuance

of Govt. of India's Rajbhasha policy to promote Indian languages and Rajbhasha "Hindi", POWERGRID has proved its commitment to ensure progressive use of Hindi in all its office works.

For outstanding and noteworthy contributions in Hindi,a number of incentive and reward schemes are in force. To increase the use of the official language and for its continued propagation, various activities like workshops to give training, meetings, poetry session, Publication of Hindi magazines/papers, lectures from eminent personalities are regularly organized. To achieve the goal as laid out in the Rajbhasha Annual Plan, POWERGRID has made all efforts to integrate use of Hindi in all aspects of management in the corporation and at all levels.

The efforts made by POWERGRID in promoting the implementation of Rajbhasha has been applauded in many forums which is reflected in POWERGRID bagging the Rajbhasha Shield of Ministry of Power, and is the recipients of many other awards ; viz. Rajbhasha Vikas Sammelan, Ghaziabad, Second Prize to the Grid Darpan by (Ank 11), Rashtriya Hindi Academy, Rupambara, Calcutta, the Rashtriya Rajbhasha Shield for the best Patrika, Bhasha and Sanskriti Award for excellent work in Hindi and excellent work of POWERGRID in the last five years.

RURAL ELECTRIFICATION CORPORATION LIMITED

In consonance with The Annual Programme for Implementation of Official Language during the year 2005-06, a brief description of special efforts made are given in the following paragraphs:

1. From 14.09.2005 to 28.09.2005 Hindi Pakhwara was organised. During this period various competitions including debates, noting, drafting etc. were held for Executives as well as for non Executives.
2. With a view to assess the use of Hindi six sections of various Departments at the Corporate Office and four Project Offices were inspected

   Level of original correspondence made in Hindi in "A" region reached 66.72%, "B" region 66.33% and C" region 48.00%. This is 7% more as compared to the last year.

   Level of Noting in Hindi attained 40% which is 15% more compared to the last year.
3. Regular Quarterly Meetings of Official Language Implementation Committee were held.

   Workshops were organized in which 27 Executives and 25 Non Executives were benefited.

   A training programme of 21 days was organized from 01.12.2005 to 24.12.2005 at CIRE Hyderabad in association with The Central Translation Bureau (CTB). 18 officers have benefited from this training programme.
4. REC website is available in Hindi as well as in English and is constantly being updated/amended.

   Standard proforma in use in the Corporation are available on the Intranet for use, in Hindi.
5. All Publications, Report, Memorandum, Articles of Association, Press Releases, etc. are compulsorily being issued bilingual.
6. 62.20% of Library budget has been utilized for purchase of Hindi books.

   Executives and non Executives who have attempted Noting/Drafting in Hindi during 2004-05 will be evaluated and they will be given suitable prizes.

   50% of the prize money to winners in various competitions will be in the form of Hindi books and 50% in cash.

Chapter - 15

VIGILANCE ACTIVITIES/DISCIPLINARY CASES

MINISTRY OF POWER

During the year 2005-06, attention on the preventive vigilance in the public sector enterprises of Ministry of Power was continued to review vigilance work being done by the various public sector enterprises and offices functioning under the Ministry of Power. Secretary (Power) had taken meeting with CVOs of PSUs under this Ministry to review the status of vigilance cases.

A regular monitoring and watch is being kept on the cases received from CVC under Public Interest Disclosure Resolution. PSUs are requested to ensure greater compliance with the guidelines issued by the CVC for processing and award of tenders. 22 cases of vigilance irregularities were disposed of by the Vigilance Wing. Eleven cases of disciplinary proceedings were pending/ contemplated and were at different stages of processing.

Vigilance Awareness Week was celebrated in this Ministry and its attached officers/PSUs from 7th November to 11th November 2005. On this occasion Secretary(Power) administered the pledge to all the officers and staff of the Ministry. Essay Writing Competition, Poem Writing Competition and Poster-cum-Slogan Competition were held during the week to convey the message of integrity, honesty and transparency in the society.

The Vigilance Division, CEA deals with various facets of vigilance mechanism and functions as a resource to the top management for carrying out investigations into complaints, suggesting corrective measures for improving the control systems, compliance of laid down procedures and also for carrying out preventive vigilance exercises.

At the beginning of the year, there were eight cases of disciplinary action pending under CEA's jurisdiction. Out of that three have since been finalised and action in respect of remaining five cases is at an advance stage of completion. During the year four new cases were added out of which two cases have been finalised. Action in respect of remaining two cases is in progress. Thus at present in all, there are eight cases pending finalisation.

Complaints other than anonymous/pseudonymous were taken up for investigation promptly and after completion of investigation formalities, reports submitted to the Disciplinary Authority, for initiation of disciplinary proceedings.

Vigilance Division has carried out inspection of a formation of CEA with a view to apprise and ensure adaptation of proper procedure as well as suggesting improvement thereon.This inspection has helped in increasing transparency in dealing with public. As a part of preventive vigilance, the Vigilance Division ensures job rotation in sensitive posts and also assisted in ensuring that persons under cloud are not posted at sensitive posts.

Prescribed periodical returns were timely sent to Central Vigilance Commission and the Ministry of Power. Vigilance Awareness Week was observed from 7.11.2005 to 11.11.2005 in CEA Headquarters and its Subordinate Offices to spread the message of integrity and transparency.

NTPC

NTPC Vigilance Department - as ISO 9001-2001 accredited department of the NTPC, consists of six Units, namely Corporate Vigilance Cell, Departmental Proceeding Cell (DPC), MIS Cell, Task Cell, Technical Cell (TC) and Corporate Vigilance Cell, Noida. These units deal with various facets of Vigilance Mechanism. Exclusive and independent functioning of these Units ensure transparency, objectivity and quality in vigilance functioning.

2. The disposal of complaints has been in accordance with the time-frame prescribed by the CVC. 74 complaints were handled during the period. All these complaints were investigated and carried to a logical conclusion. Besides that 04 complaints were received from CVC. These complaints were also taken up for investigation within the stipulated time-frame.

3. 22 officials were proceeded against for major penalty disciplinary action. 59 officials were proceeded against for minor penalty action and 58 officials were proceeded against for administrative action from April 01, 2005 to Nov. 30, 2005. Major penalty was imposed on 07 officials and minor penalties were imposed on 75 officials. Out of above cases 20 employees were facing disciplinary action in CVC cases as on March 31, 2005. While 07 employees were facing major penalty action, 13 employees were facing minor penalty action. 04 cases of major penalty action and 08 cases of minor penalty action were disposed of during the

period. During the period 06 employees were added. Hence, as on November 30, 2005, disciplinary action is pending against 14 employees.

4. So far as CBI cases concerned, 02 CBI cases are under prosecution and 01 case is under investigation as on Nov 30, 2005.

5. 223 Surprise Checks were conducted. 16 cases were instituted out of these checks. Recovery of Rs. 45,00,000/- was effected. 29 System Circulars were issued. During the period 24 Preventive Vigilance Workshops were conducted at various projects/place in which 626 employees participated. NTPC Vigilance Dept. has published the XII Volume of Annual Vigilance Journal 'Sachetak' Property Returns relating to immovable property are obtained from employees every two years. The maintenance of Property Returns has been computerized for an easy access. Internal Audit Reports pertaining to NTPC Projects/Stations, Sites and Regional Headquarters received from NTPC Finance Department during the year were examined from vigilance angle.

6. Vigilance Awareness Week was observed all over NTPC with tremendous enthusiasm, in NTPC Project, Regions, and Sites from November 07, 2005 to November 11, 2005.

NHPC

NHPC Vigilance Division at Corporate office has been granted ISO-9001: 2000 certification by BIS. All procedures have been documented and systems of monitoring of Vigilance complaint and disciplinary cases have been implemented to avoid delays. Regular and surprise inspections are being conducted by the Vigilance Department at regular intervals. Actionable points are identified by the P.V.O. and intimated to head of the Project from time to time. Intensive examination of the work is carried out by Chief Technical Examiner of the CVC as well as personnel of Vigilance Department of NHPC. Emphasis is also laid on preventive vigilance by issuing Circulars and Guidelines based on inspection / intensive examinations. Various Vigilance awareness programmes are also conducted at regular intervals, so as to make working as transparent as possible. The fifth issue of in-house Vigilance Journal named "Chetna" was issued during November 2005.

PFC

Vigilance is not a stand-alone activity. It is a part of the overall management strategy of an organization where the systems, processes, policies and procedures are built in a manner to prevent leakages, which adversely affect its productivity and profitability. With this background, Vigilance Unit functions as an asset to the top management for carrying out investigation into complaints, suggesting corrective measures for improving the control systems, enforcing compliance of laid down procedures and also taking other preventive vigilance initiatives.

During the financial year 2005-06 (up to 31st Dec, 2005), the Vigilance Unit functioned as an effective tool of positive management with the thrust being on preventive vigilance. Conducting periodic & surprise inspection of files and focused upon this aspect by issuing effective guidelines to streamline systems with the aim of eliminating loopholes and ensuring transparency in day to day operations so as to minimize scope for misuse. Vigilance Unit undertook the review of operational manuals of various activities of the Corporation. A number of comprehensive manuals on different areas of company's activities have already been notified after review and some other manuals are in the process of finalization. Further, during the period, detailed investigation was carried out in five cases of complaints out of which three cases were closed with the approval of competent authority and the balance two are under investigation.

As part of other preventive vigilance initiatives, Vigilance Unit reviewed the property returns of the employees on a continuous basis. It ensured job rotation in the sensitive posts and worked towards maintenance of transparency and objectivity in administration by suggesting adequate checks and balances and internal control systems. The vigilance clearance cases of the employees were processed on a continuous basis in respect of resignations, promotions, going abroad for personal visits, etc.

As per the directive of CVC, Power Finance Corporation Limited observed Vigilance Awareness Week from 7th November to 11th November 2005 in the head office and regional offices with a view to highlighting the harmful effects of corruption and educating and sensitizing the employees & customers of the Corporation about their rights and the constructive role they can play in fighting corruption. PFC organized a one-day programme on 'Vigilance Awareness' for executives of the Corporation to inculcate awareness among staff on the need for strict adherence to systems & procedures as well as to disseminate a strong message of integrity and transparency in public service. In addition, PFC also organized a programme on 'Customer Interface

– Initiatives towards a Faster Product Delivery' exclusively for its customers/clients. Further, Slogan, Essay and Pictorial Theme Representation Competitions were organized on themes relating to vigilance/corruption with the aim of involving employees and encouraging them to come forward with innovative ideas to spread awareness about the ill effects of corruption.

During the period from January 2006 to March 2006, Vigilance Unit intends to work towards review & notification of the operational manuals, which are presently under process, and also completion of investigation of complaint cases in hand. Postings & periodic rotation in the sensitive posts will be monitored. Vigilance Unit will take up the matter of filing and verifying of property returns due on 01.01.2006 in respect of the employees of the Corporation. The 'Agreed List' and 'List of officers of Doubtful Integrity' will also be drawn up during this period in accordance with the directives of CVC. Periodic & Surprise inspections of files will continue to be conducted and guidelines will be issued to the concerned departments with the aim of ensuring transparency, objectivity and accountability in their day-to-day operations.

REC

A. Progress made during the current year upto November. 2005.

1 The Vigilance Division of Corporation under the charge of Chief Vigilance Officer (of the rank of Functional Director) continued playing its important role of instilling probity in the organisation, inculcating habits of adherence to systems and procedures amongst the employees of the Corporation and enforcing discipline in judicious exercise of administrative and financial powers by different field functionaries.

.2 The Vigilance set up, consisting of one CVO and 3 officers unceasingly strived to improve all aspects of vigilance i.e. preventive, detective and punitive. The Vigilance Division ensured that the guidelines issued by CVC were fully implemented by the Corporation.

.3 The Corporation continued to accord a major thrust on preventive vigilance, streamlining and strengthening systems and procedures. Accordingly, all the important circular received from CVC have been placed on the REC intranet for information and necessary action by all the Project Offices/ Central Instt. for Rural Electrification, Hyderabad. The Vigilance Division played a very important and active role in getting the existing guidelines revised/ updated.

4 Vigilance Awareness Week, was observed both at the Corporate office as well as at all the field offices in the country. Senior and Middle Level Executives of the Corporation were given exposure on the latest techniques in anti-corruption work and lectures by distinguished speakers were arranged. A number of officers were also deputed for training courses at CBI Academy, Ghaziabad.

5 Agreed lists in respect of all the 19 offices of the Corporation were finalised after discussions with the local branches of CBI. During the period under report, 3 cases have been disposed off and in one case, the Inquiry Officer has submitted his report to the Disciplinary Authority.

6 As per the directions of the Hon'ble High Court of Delhi and the instructions received from C.B.I./MOP, all appointment after 1.1.95 made by the Corporation under ST Category were verified and one case came to notice in which a fake/forged ST certificate was submitted by the employee. Disciplinary action has been initiated against the employee.

7 The performance of Vigilance Division was reviewed by CMD, REC, CVO, MOP, Central Vigilance Commission. CVO also undertook periodic reviews, as per existing norms. The Division has maintained good liaison with outside agencies like the CVC and the CBI in addition to effective coordination with different Departments/Offices within the Corporation for expeditious disposal of vigilance cases.

PGCIL

During the period January to November 2005, 53 complaints have been received, out of which 31 are signed complaints. Among these, 3 complaints have been received from Ministry of Power (MoP) and Central Vigilance Commission (CVC) during the year. Reports in respect of 4 complaints have already been sent to the CVC and MoP respectively. During the year 27 complaints have so far been taken up for investigation. Apart from this, 12 inspections conducted by the regions also formed the source of complaints. Disciplinary proceedings were also initiated in the cases investigated, and during this year 6 cases have been disposed and as on date 3 disciplinary cases are pending.

The Vigilance Department of POWERGRID has, laid special emphasis on inspections, both at the Corporate as well as the regional level. During the year 2005, till the month of

November 2005, 123 inspections were conducted out of which 72 are site inspections 17 are site inspections and 34 inspections in which scrutiny of files/LOAs (letter of award) was undertaken. Out of these inspections, 11 cases have so far been instituted out of inspections till November 2005. Apart from this, the Vigilance Department has made significant recoveries to the tune of Rs.1,58,12,309 during the year. During the year 2005 Rs. 43,71,523/- has been recovered on account of CTE inspections.

In POWERGRID, high priority has been placed on training and as part of these various workshops were organised at the regional levels and also as part of the HRD Calendar for training. As part of this drive, a workshop on 'Values and Ethics' was organised at Indian institute of management (IIM), Kolkata and at Banaras Hindu University for 43 executives of POWERGRID. A Training course on 'Values and Ethics in Management' was conducted on November 08, 2005 for employees of Corporate Centre and representatives of M/s Powerlinks Ltd., a joint venture of POWERGRID which was organised by Prof. S.K. Chakraborty, former Convener, Management Centre for Human Values, IIMC, Kolkata.

During the month of October 2005, deliberations were held on the Integrity Pact. A Committee was formed to finalize the Integrity Pact, handed by Shri Gopalachari, IPS (Retd.) which is being prepared on the guidance of CVC as well as Transparency International. Since the Pact was aimed at bringing about absolute fairness and transparency in the dealing with the vendors in the matters of tendering and procurement practices of POWERGRID, it was decided to hold a meeting with the Vendors and Media in a forum for deliberations on the Integrity Pact at New Delhi on 8th November, 2005 during the Vigilance Awareness Week. Shri R.H. Tahiliani, (Retd. Admiral) and presently Chairman, Transparency International India, and Shri Gopal Achari, IPS, former Special Director, CBI gave the presentation on the Integrity Pact in which the media and vendors evinced considerable interest. Besides publication of the annual in house journal 'Candour' the Vigilance Awareness Week was also marked by Inter School and College Debate Competitions as well as elocution contests which were organised at the Corporate Centre and the regions. On the occasion, a book titled "Teaching Integrity to Youth" which has been brought out by Transparency International was also circulated. Besides the above, contests like slogan writing, essay writing, cartoon competition and quiz competitions were organised for the employees and their family members on the occasion.

The right to Information Act was implemented in POWERGRID during the month of October and 13 employees have been designated as Information officers of the organization while 13 senior employees have been designated as Appellate Authorities under the Act.

NEEPCO

Vigilance Activities: Keeping in view of various directives and guidelines of the Central vigilance Commission, Action Plan on Anti-Corruption & Vigilance measures have been taken up. Complaints received from various sources are regularly monitored and where prima-facie evidence are found, investigations have been carried out. More emphasis have been given to different aspects of Preventive Vigilance to streamline the rules and procedures and plug the loopholes, detected during investigation/inquiry of various cases.

SJVN

Vigilance Clearance

Upto date vigilance status of the employees and executives of SJVN as well as those on deputation was maintained and cases of vigilance clearance were promptly dealt with on their receipt from the concerned administrative authorities.

THDC

The Vigilance Department undertook the job of preventive and detective vigilance and encompassing all the activities of the Coporation. In order to achieve the highest level of transparency all concerned were asked to streamline, adopt and follow the laid down systems and procedures. The day to day activities of the vigilance department were reviewed on monthly basis by the CVO, and by the CMD from time to time. The time schedule for conducting the enquiries and investigations were followed. The Vigilance Awareness Week was organized at all offices of the Coporation with zeal and enthusiasm.

DVC

(A) Current year upto 30th November. 2005

The Vigilance Department continued its effort to achieve Corporate objectives within the framework of instructions received from CVC and Ministry of Power.

As in the past, considerable stress was laid on the strengthening of different systems prevalent in the DVC. As a result, series of Office Orders were issued by the Corporation on the basis of recommendations made by Vigilance Department towards effecting system improvement. The Vigilance Department also worked

along with the concerned Departments towards increasing the coverage of IT usage and e-governance.

The Vigilance Department took initiative towards holding of meetings/workshops for increasing the awareness of the employees. Shri V. Ramachandran, CTE, addressed officers of the Corporation regarding CVC's Guidelines pertaining to the Contracts and Procurement Procedures etc. on two different occasions. The officers of the Vigilance Department were also deputed to Training Programmes for delivering lectures on areas related to Preventive Vigilance.

In the area of Preventive Vigilance special emphasis was laid on intensive examination of major works. A series of detailed CTE type inspections were carried out by the officers of the Vigilance Department. A team of officials belonging to CTE's Organization under CVC made regular visits to the DVC. The officials of the Vigilance Department were deputed to provide all necessary assistance to the CTE team.

The Vigilance Awareness Week - 05 was observed w.e.f, 7.11.2005 to 11.11.2005 throughout the Valley with due sincerity. Cross sections of DVC employees took part in different programmes organized during the week.

BBMB

The Vigilance Organisation in Bhakra Beas Management Board comprises a Chief Vigilance Officer (CVO) of the rank of Dy.Chief Engineer who is helped by six Vigilance Officers (VOs) of the rank of Superintending Engineers at various Project Stations of Bhakra Beas Management Board, viz Bhakra Dam, Nangal (Two VOs), Beas Dam, Talwara (One VO), Beas Satluj Link Project, Sundernagar (One VO), Chandigarh (One VO) and Panipat (One VO). Any complaint(s) received is got investigated through the VO and appropriate action is taken.

The Vigilance Organisation in BBMB is doing earnest efforts to inculcate in all the employees of BBMB the following as a measure of preventive vigilance:-

I) To check and control the very tendency on one's part to delay the matters.

II) To record speaking orders in clear terms on the files giving merits of the orders.

III) To avoid decisions being influenced by those who might have an axe to grind.

IV) To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.

V) To be firm in conviction that integrity is to be safeguarded and any price paid in this regard is insignificant.

VI) To keep a watchful eye on all breeding places of corruption.

VII) To expose without fear those involved in acts of self gratification.

VIII) To take pride in humble living and acts of honesty.

IX) To follow the rules, procedures, instructions, manuals, etc. meticulously.

X) To avoid drawing illogical and dubious inferences so as to derive undue benefits, whenever an ambiguity in rules is encountered.

XI) To expedite the inquiries, their follow up action to get decision from parent States/State Electricity Boards.

XII) Implementation of disciplinary actions without any delay wherever BBMB itself can take the same

Besides above, Vigilance Awareness Week – 2005 was celebrated w.e.f 7.11.05 to 11.11.05 in BBMB offices at Chandigarh as well as at Project Stations. An interactive session on vigilance awareness was also conducted on 9.11.05 at Chandigarh.

THDC

The vigilance Department undertook the job of preventive and detective vigilance and encompassing all the activities of the Corporation. In order to achieve the highest level of transparency all concerned were asked to streamline, adopt and follow the laid down systems and procedures. The day to day activities of the vigilance department were reviewed on monthly basis by the CVO, and by the CMD from time to time The time schedule for conducting the enquiries and investigations were followed. The Vigilance Awareness Week was organized at all offices of the Corporation with zeal and enthusiasm.

NPTI

Vigilance Activities at NPTI are being looked after by a Director as an additional responsibility. The status of vigilance activities is as under:-

- Departmental enquiry in respect of two Officers are in process.
- Vigilance Awareness Week was observed from 7th November to 11th November, 2005.

Chapter - 16

ACTIVITIES RELATING TO WOMEN EMPLOYEES

There are 44 women employees in the Ministry of Power. The representation of women employees at various level in the Ministry of Power is indicated below:

Group	Total employees*	Women Employees	Percentage of overall staff strength
A	48	07	14.58
B	98	21	22.10
C	92	14	15.55
D	67	02	2.98
Total	**305**	**44**	**14.66**

@ As on 08.02.2006

Employment of women in various grades in the Ministry of Power depends on the nominations received from the recruiting agencies such as the Union Public Service Commission (UPSC), Staff Selection Commission (SSC) etc.

A Complaints Committee exists in the Ministry of Power to look into the complaints of sexual harassment by the women employees of the Ministry. A Women's Cell too exists in the Ministry to oversee various welfare activities of women employees of the Ministry of Power

Women employees of this office participate in all the activities such as sports, recreation , council activities. They are also made members of the Governing Bodies like CEA Departmental Canteen Management Committee

BTPS

10. Out of total number of 59 women employees, 9 are in Supervisory category, 23 in Executive Category & 27 in Workmen Category.

NTPC

Category of Employees	Total Employees	Female Employees	% of Female Employees
Non-Executives	13867	746	5.37
Executives	9839	313	3.18
Total	23706	1059	4.46

PFC

In line with the philosophy of giving equal opportunity, PFC has Women Employees handling critical responsibilities across various hierarchical levels. This covers specilized filed like Law. Human Resources, Appraisal and Accounts etc.

NHPC

Activities relating to women Employees: Number and Percentage of women Employees in NHPC as on 30.11.2005

Cadre	Total No. of Employees	No. of Female Employees	% of Female Employees
Executive Assistant Officer/ AE /	**3101**	**201**	**6.48%**
Supervisor	**2323**	**140**	**6.02%**
Workmen	**7810**	**699**	**8.95%**
Total	**13234**	**1040**	**7.85%**

Steps taken for Welfare of women employees:

- Generally women employees are not transferred except in cases of administrative exigency and even if transferred due care is taken to ensure that posting is made to the station where the spouse is posted. No women employee is posted to hard projects.

- Special care is always taken to nominate deserving women employees to training programmes / seminars organized exclusively for women employees.
- Free membership of WIPS (women in Public Sector) at Corporations expense.
- Creche facility is provided for women with infant children in Corporate Office.
- Suitable mechanism for prohibition of harassment of women employees at work place.
- Special committees have also been set up to look into the grievances/ complaints of harassment of women employees.

PGCIL

As on November, 2005 there are 379 Women Employees working at different levels in the corporation out of a total of 7,068 employees. Details are given below:

Category	Total no. of Employees	No. of Female Employees	% of Female Employees
Executives	2,874	110	3.83%
Non-Executives	4,194	269	6.14%
Total	**7,068**	**379**	**5.36%**

SJVN

Since the inception in 1989, 84 females have been recruited at various executive / non - executive levels in the Corporation. At present, the strength of the women employee is 57 which comprises of 17 Executives and 40 Non-Executives. Their present strength accounts for about 10% of the total work force of the Corporation. It is ensured that women employees get adequate representation in various activities / programmes in the Corporation. In the year 1997, a Women Cell has been setup in the Corporation with the objectives of promoting awareness among women employees about their rights and their all round development. This cell is being headed by a female employee of the rank of an executive in the middle level management. This Cell is functioning effectively since then.

In line with Supreme Court Judgement in the mater of Vishaka and other Vs. State of Rajasthan, necessary clause has been incorporated in the conduct, discipline & appeal rules and certified Standing Orders of the Corporation besides formulating Complaint Committees – one each at Corporate Office and Project Site to look into the matters relating to Sexual Harassment of Women Employees at work place.

THDC

THDC lays emphasis on gender equality and development of women employees. Women employees were encouraged to take active part in various social activities, Workshops and Training Programmes. As a part of women empowerment, Women cell set up for the well-being of the women employees of the Corporation continued its activities effectively during the year.

DVC

The Corporation has number of women employees working almost in all levels of hierarchy. During the Financial Year 2005-06, number of women employees appointed under various categories is given below:

Group 'A'	12
Group 'B'	18
Group 'C'/'D'	1

Sports & Games facilities are extended to women employees also and they are encouraged to take part in competition of Sports & Cultural events, in the Intra and Inter Valley Level. During the year 2005-06 female athletes of DVC selected in the DVC Team, are being deputed in the competition held in the APSU of power sports control Board & AISESCB.

All statutory facilities like maternity and other benefits are extended to the women employees. Their working conditions are governed under the statutory provisions of the Factory Acts and the Shops and Establishment Acts.

Complaint Committee(s) to address complaints of sexual harassment of women employees at working place has been constituted in all the projects. The Committee members at the Corporation's cost are being sent to participate/ attend symposium and seminars in order to aware of the problem of sexual harassment to the women employees and to handle the grievances.

Appointments of Physically handicapped categories are made as GOI Rule. During the employment they are engaged only in those jobs which they can perform depending on their capacity as prescribed by GOI rules.

BBMB

BBMB is a statutory body set up by the Ministry of Power consequent upon the enactment of Punjab Re-organisation Act, 1966 to carry out the functions of operation and maintenance of Bhakra Nangal Projects

on behalf of the Partner States for which Staff for the operation & maintenance of BBMB works is provided by the Partner State Govts./State Elecy. Boards on transfer basis. However, in the event of inability of Partner State Govts./ State Elect. Boards, BBMB resorts to direct recruitment in respect of Group 'C' & 'D' employees only. BBMB is following the reservation policy of Punjab Govt. issued from time to time. Due representation is being given to the Women Employees as well as Physically handicapped persons in direct recruitment as per policy of the Punjab Govt.

CPRI

Women cell in CPRI is functioning since 1997 to look after the welfare activities of woman employees (totaling to 89 and constitute 11.61% of total employee strength). The initiatives taken by the woman cell includes running of Creche satisfactorily for last 8 years for the employees children and grievance redressal of the woman employees of the Institute Woman Welfare activities

NPTI

12% employees of NPTI are women. During 2004-05, one women employee has been promoted to the post of Junior Accounts Officer.

PFC

In line with the philosophy of giving equal opportunity, PFC has Women Employees handling critical responsibilities across various hierarchical levels. This covers specialized field like Law, Human Resources, Appraisal and Accounts etc.

THDC

THDC lays emphasis on gender equality and development of women employees. Women employees were encouraged to take active part in various social activities, Workshops and Training Programmes. As a part of women empowerment, Women Cell set up for the well-being of the women employees of the Corporation continued its activities effectively during the year.

REC

STATEMENT SHOWING NUMBER OF WOMEN EMPLOYEES IN VARIOUS POSTS, PHYSICALLY HANDICAPPED, SC AND ST EMPLOYEES IN REC As ON 30.11.2005

Sl. No.	Post(s)	No. of employees	No. of women employees
1.	Executive Director/GM/CS	08	01
2.	Chief	17	—
3.	Joint Chief	25	03
4.	Deputy Chief (Eco./Fin./Engg./Iso.)/ FM etc	28	03
5.	Finance Executive - 1	01	01
6.	Dy. Director (Eco./Gen./Hydro/EDP)/DPE etc.	48	12
7.	ACAO	21	01
8.	Finance Executive - II	02	—
9.	Asstt. Director (Eco./Gen./Iso.)/APE etc.	18	05
10.	Sr. Accounts Officer	05	—
11.	Accounts Officer /Section Officer/ PS	86	17
12	Acctt./Sr. Asstt./Sr. PA/SCD (Hr. Gr.)/EDP Analyst or equivalent	112	17
13	Asstt (A/cs)/Asstt/L. Asstt./UDC/ LDC/Steno-ffl/PA/Comp. OptrVSCD	174	30
14	DMO/PMO/BMO	04	—
15	Electrician /AC Mechanic / Lift Operator	02	—
16	Class - IV	114	11
	Total :	**665**	**101**

Women Employees of NTPC at the Corporate Office

NHPC Sportswomen with Senior Officials

Chapter - 17

PHYSICALLY CHALLENGED EMPLOYEES

MINISTRY OF POWER

Ministry of Power appreciates the requirement of providing reservation to the Physically Challenged in appointments and the various Government directives in this regard are duly followed by it. The implementation of the reservation policy for Physically Handicapped persons in the Ministry of Power and various organizations under its administrative control is monitored by the Deputy Secretary (Administration) & Liaison Officer (Physically Handicapped) of the Ministry.

The representation of Physically Handicapped employees in the Ministry as on 31.12.2005 is as under:

Groups	Total number of employees	Physically Handicapped
Group A	48	–
Group B	98	–
Group C	92	02
Group D	62	02
(Excluding sweepers)		
Group D (Sweepers)	05	–
Total	**305**	**04**

NHPC

Numbers and Percentage of Physically Challenged Employees in NHPC as on 31.12.2OO5

Cadre	Total No. of Employees	No. of Physically Challenged Employees	% of Physically Challenged Employees
Executive Assistant Officer / AE/	3101	22	0.71%
Supervisor	2323	38	1.63%
Workmen	7810	37	0.47%
Total	**13234**	**97**	**0.73%**

NEEPCO

37 physically challenged employees are working in the Corporation out of the total strength of 3,323.

PFC

The Government orders regarding reservation for Physically Handicapped Persons in the Services of company are being followed.

The steps taken to ensure this include conduct of special drives to fill the positions earmarked for them, maintenance of necessary record and such other provisions as applicable.

PGCIL

As on November 2005 there are 37 Physically Handicapped Employees working at different levels in the corporation out of a total of 7,068 employees.

SJVN

From the very beginning, it has been the endeavor of SJVN to give due representation to the physically challenged persons in the employment of the Corporation. However, due to geographical conditions and peculiar construction work of the hydro electric projects, most posts in the technical area do not suit the disabled persons. As such, their employment has mainly been in non technical posts. At present, their strength is 5 (five), which is about 0.59 % of the total manpower of the Corporation.

THDC

The Corporation has provided employment to 4 Physically Handicapped persons as per Govt. of India directives.

BBMB

BBMB discharges its functions as laid down in Section 79(1) of the Punjab Re-organization Act, 1966 for which staff for the operation & maintenance of BBMB work is provided by partner State Govts./SEBs on transfer basis. In view of provisions of Rule 6 of BBMB Rules, 1974 and Regulation 11 of BBMB Class III & Class IV Employees (Recruitment and Conditions of Service) Regulations, 1994, BBMB is following the reservation policy of Punjab Govt. issued from time to time in regard to implementation of provision of reservation in jobs for physically handicapped persons. According to the instructions of the Punjab Govt., 3% vacancies to be filled up by direct recruitment reserved for physically handicapped persons 1% each in the category of blind, deaf & dumb and orthopaedically handicapped. Instructions have been issued to all CEs

that the policy instructions of Punjab Govt. regarding reservation for persons with disability issued from time to time may be followed strictly at the time of making direct recruitment and also to ensure that reservation of persons with disabilities does not lapse.

CPRI

The physically challenged employees constitute 16% of the total employee strength of CPRI. Shri. Suresha, Attendant Grade I, who is orthopedically handicapped, participated in the International Open German Athletics Championships-held at Berlin, Germany from 12-14 August, 2005 and won individual Gold and Silver medals in the events Javelin Throw and Discus Throw respectively.

NPTI

One vacancy reserved for Physically Handicapped candidate was filled up.

NTPC

Details of Physically Handicapped Employees in NTPC as on 30.10.2005

Category of Employees	Total Employees	Physically Challenged Employees	% of Physically Challenged Emplyees
Non-Executives	13867	348	2.51
Executives	9839	37	0.38
Total	**23706**	**385**	**1.62**

REC

STATEMENT SHOWING NUMBER OF WOMEN EMPLOYEES IN VARIOUS POSTS, PHYSICALLY HANDICAPPED, SC AND ST EMPLOYEES IN REC As ON 30.11.2005

Sl. No.	Post(s)	No. of employees	No. of Physical Handicapped
1.	Executive Director/GM/CS	08	—
2.	Chief	17	—
3.	Joint Chief	25	—
4.	Deputy Chief (Eco./Fin./Engg./Iso.)/ FM etc	28	01
5.	Finance Executive - 1	01	—
6.	Dy. Director (Eco./Gen./Hydro/EDP)/DPE etc.	48	—
7.	ACAO	21	—
8.	Finance Executive - II	02	—
9.	Asstt. Director (Eco./Gen./Iso.)/APE etc.	18	01
10.	Sr. Accounts Officer	05	—
11.	Accounts Officer /Section Officer/ PS	86	01
12	Acctt./Sr. Asstt./Sr. PA/SCD (Hr. Gr.)/EDP Analyst or equivalent	112	01
13	Asstt (A/cs)/Asstt/L. Asstt./UDC/ LDC/Steno-ffl/PA/Comp. OptrVSCD	174	03
14	DMO/PMO/BMO	04	—
15	Electrician /AC Mechanic / Lift Operator	02	—
16	Class - IV	114	—
	Total :	**665**	**07**

Chapter - 18

WELFARE OF SCs/STs/OBCs/MINORITIES

Ministry of Power

An SC/ST Cell has been functioning in the Ministry since the early nineties under the direct control of the Deputy Secretary (Administration) who is also the Liaison Officer for Scheduled Castes and Scheduled Tribes. SC/ST Cell also assists the Liaison Officer for OBCs. The Cell monitors the implementation of reservation policies of the Government of India in respect of Scheduled Castes, Scheduled Tribes, Other Backward Classes, in the ministry as well as Autonomous Bodies/CPSUs under the administrative control of the Ministry of Power.

2. The total strength of employees and representation of Scheduled Castes, Scheduled Tribes and Other Backward classes in the Ministry of Power is indicated in the following statement:

Groups	Total number of employees	Number of Scheduled Caste employees	Number of Scheduled Tribe employees	Number of OBC employees
Group A	48	06	02	-
Group B	98	16	03	01
Group C	92	20	01	08
Group D (Excluding sweepers)	62	33	02	-
Group D (Sweepers)	05	03	-	-
TOTAL.	**305**	**78**	**08**	**09**

3. With a view to ensuring proper implementation of reservation policy, annual inspections of reservation rosters maintained by the various organizations under its administrative control, were carried out by the Liaison Officer (SC/ST) and the inspection reports sent to the concerned Appointing Authorities for rectifying the discrepancies found, if any, during inspection. During inspections, LO (SC/ST) also had interactions with employees belonging to reserved categories. These interactions helped to obviate many of their misconceptions/misapprehensions and promote better understanding of the reservation policy of the Government.

4. Ministry of Power recognizes the importance and need to fill up all vacant reserved posts by appointment of candidates from respective categories and various Special Recruitment Drives to fill reserved vacancies in the various organizations under its administrative control, have been carried out by the Ministry in the past. As part of the Common Minimum Programme of the Government, in September, 2004, the Ministry launched a Special Recruitment Drive to fill up the backlog vacancies reserved for Scheduled Castes and Scheduled Tribes. Various organizations under the administrative control of the Ministry were instructed to carry out such Special Drive in accordance with prescribed time schedule.

5. The progress of the above Special Drive was closely monitored through various progress reports and senior level meetings. In the first phase, most of the Organisations under the Ministry had completed the Drive by May, 2005. The backlog reserved vacancies still remaining unfilled were re-advertised and the selection was completed by December, 2005. As a result of special efforts put in by the Ministry about 88% of backlog reserved vacancies in the various organizations under the Ministry had been filled by December, 2005.

Separate schemes do not exit in the Ministry of Power for welfare of the minorities. However, the schemes, if any recommended for their welfare from time to time by the Government agencies concerned are implemented

CEA

Representaiton of Scheduled Castes & Scheduled Tribes As on 31.12/2005

Category	No. of Govt. Employees		No. of SC	No. of ST
	Sanctioned	Filled	Govt. Employees	Govt. Employees
Group A	548	407	54	8
Group B	454	453	62	16
Group C	497	397	70	15
Group D	229	218	81	8
Total	**1728**	**1475**	**267**	**47**

PGCIL

The Corporation has faithfully implemented the Govt. directives to take care of the interests of Scheduled Castes, Scheduled Tribes and Other Backward Classes. For monitoring the same, POWERGRID has nominated Liaison Officers in the Corporate Centre and Regional Establishments. Appropriate funds have been earmarked for the welfare of the SC/ST community and a number of welfare schemes have been implemented in the SC/ST populated villages near its establishments.Statement showing the number of employees and the number of SC, ST & OBC in POWERGRID amongst them as on 21.12.2005

Group	Representation of SC/ST/OBC (as on 21.12.2005) On Absorption Basis			
	TOTAL	SC	ST	OBC
A	2874	282	86	308
B	1571	180	56	114
C	2247	330	131	264
D	376	69	48	46
SUB TOTAL	**7068**	**861**	**321**	**732**

Group	Number of appointment made during calendar year 2005 By Direct Recruitment (As on 21.12.2005)			
	TOTAL	SC	ST	OBC
A	158	35	11	37
B	Nil	Nil	Nil	Nil
C	51	10	09	08
D	Nil	Nil	Nil	Nil
TOTAL	**209**	**45**	**20**	**45**

NTPC

NTPC Ltd., as a company, is committed to promote the interest of SCs/STs/OBCs and to improve their representation in the services. It is the policy of the company to address their concerns with ultimate objective of powering India's growth. The major efforts made by the company in this direction are :

> The company has launched six special recruitment drives from 1989-90 to 1996.These were discontinued from 1997 as per Government instructions. However, the same has been restored since July 2000. NTPC has again launched five special recruitment drives during the period from July 2000 to Nov 2005.

> So far company has recruited 836 SCs and 402 STs through above 11 special recruitment drives.

> The company has taken following steps for widely circulating reserved vacancies:

- Advertisement/notifications in areas with predominant SCs / STs population.
- Circulation of vacancies to recognized accredited SCI ST associations.

> NTPC's special scheme for the Socio-Economic Development of SCs and STs are:

- Resettlement and Rehabilitation Programme.
- NTPC Corporate Social Responsibility Community Development (CSR-CD) policy.
- Scholarships to SC and ST students pursuing :
  a) Degree/ Diploma in Engineering Course @ Rs. 1500/- p.m./ Rs.600/-p.m. respectively.
  b) Full time MBA / PGMBM Course @ Rs.1500/- p.m.

> The number of scholarships have been increased from 20 to 30 for SC/ ST students pursuing degree in engineering.

> NTPC Gold Medal instituted for SC/ST students pursuing Personnel Management Course and Rural Development Course at XISS, Ranchi and XIMB, Bhubaneshwar.

NHPC

In NHPC the representation of SC/ST employees are comfortable. In the cases of recruitment and promotion, Government directives in Reservation Policies are being followed and rosters are maintained to monitor the status. However, during the period 01.4.2005 to 31.12.2005, no offer of appointment has been issued from Corporate Office/Recruitment Section.

- "Awareness programmes" for SC/ST/OBC employees in each of the Substations, Offices have been conducted to clear their doubts on Reservation Policy.
- Adequate representation of SC/ST employees has been given in internal training.
- Action on awareness programme on SC/ST is contemplated in near future.

PFC

The Corporation has been making necessary efforts to discharge its obligations satisfactorily in terms of government guidelines, as applicable towards economically and socially weaker communities such as SC/ST/OBC etc. The steps taken include conduct of special drives to fill the positions earmarked for them, maintenance of necessary records and such other provisions as applicable.

THDC

The Corporation has a manpower strength of 2384 employees comprising of 559 Executives, 303 Supervisors and 1486 Workmen. Under Government of India Directives, two Special Recruitment Drives for filling up the backlog vacancies for SC/ST were implemented meticulously during the period.

SJVNL

The strength of SC, ST and OBC employees as on the above date was 158, 35 and 68. Special recruitment drive is being undertaken to fill up the vacancies in these categories.

REC

STATEMENT SHOWING NUMBER OF WOMEN EMPLOYEES IN VARIOUS POSTS, PHYSICALLY HANDICAPPED, SC AND ST EMPLOYEES IN REC As ON 30.11.2005

Sl. No.	Post(s)	No. of employees	No.of SC employees Handicapped	No.ofST employees
1.	Executive Director/GM/CS	08	—	—
2.	Chief	17	01	—
3.	Joint Chief	25	02	01
4.	Deputy Chief (Eco./Fin./Engg./Iso.)/ FM etc	28	01	01
5.	Finance Executive - 1	01	—	—
6.	Dy. Director (Eco./Gen./Hydro/EDP)/DPE etc.	48	05	02
7.	ACAO	21	03	—
8.	Finance Executive - II	02	—	—
9.	Asstt. Director (Eco./Gen./Iso.)/APE etc.	18	—	—
10.	Sr. Accounts Officer	05	01	—
11.	Accounts Officer /Section Officer/ PS	86	13	05
12	Acctt./Sr. Asstt./Sr. PA/SCD (Hr. Gr.)/EDP Analyst or equivalent	112	09	03
13	Asstt (A/cs)/Asstt/L. Asstt./UDC/ LDC/Steno-ffl/PA/Comp. OptrVSCD	174	30	—
14	DMO/PMO/BMO	04	01	01
15	Electrician /AC Mechanic / Lift Operator	02	01	—
16	Class - IV	114	35	05
	Total :	**665**	**102**	**18**

DVC

The population of the villages in and around the projects belongs to mainly SC, ST, OBC and minority category. For their socio-economic development programmes in villages located within a radius of 10 Kms., Social Integration Programme was launched from 1981.

At present SIP schemes are implemented in 375 villages spread over in 8 districts of Jharkhand and West Bengal. The thrust areas of the programme are socio-economic development and infrastructural (basic amenities) development.

An amount equivalent to 2% of the preceding year's net profit of the Corporation is allocated for implementing different activities under SIP. The fund allocated for SIP is a non-lapsable fund. An amount of Rs.887.10 lakh has been allocated in the year 2005-06, out of which Rs.371.24 lakh has been spent upto November, 2005.

Under self-employment programme schemes such as development of piggeries, goat farming, poultry, fisheries etc. are also being taken up.

Besides, 40 villages were electrified by DVC through State Electricity Boards incurring an expenditure of Rs. 198.56 lakh upto 2004-05 on this scheme. In the year 2005-06, an amount of Rs.6.25 lakh has been spent till November against budget allocation of Rs.75 lakh.

One SC/ST Cell at DVC HQ exists since long with the following objectives:

(i) to ensure due compliance of the GOI orders in respect of reservation of SCs and STs;

(ii) prompt disposal of the grievances of these category of employees;

(iii) consolidate the statistical data related to SC/ST community;

(iv) to keep liaison between Ministry/department and SC/ST Association and supply of required information;

(v) to monitor special recruitment drives conducted by Corporation for filling up the vacancies.

The programmes and facilities applicable in respect of SC/ST and OBC are as well equally extended to the minority communities residing in the adjacent villages. The facilities for pursuing their cultural and literary interests are also provided to them. More so, the Projects around which Minority Community people are in large number, Urdu Mazlis have been set up, aided and maintained by DVC which caters cultural need of Minority Community.

Chapter - 19

CENTRAL ELECTRICITY AUTHORITY

Functions of CEA

The functions and duties of the Authority are delineated under Section 73 of the Electricity Act, 2003. Besides, CEA has to discharge various other functions as well under Section 3, 7, 8, 53, 55 and 177 of the Act.

As per section 73 of the Electricity Act, 2003, the Central Electricity Authority shall perform such functions and duties as the Central Government may prescribe or direct, and in particular to -

a) advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and coordinate the activities of the planning agencies for the optimal utilization of resources to sub serve the interests of the national economy and to provide reliable and affordable electricity to all consumers;

b) specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid;

c) specify the safety requirements for construction, operation and maintenance of electrical plants and electric lines;

d) specify the Grid Standards for operation and maintenance of transmission lines;

e) specify the conditions for installation of meters for transmission and supply of electricity;

f) promote and assist in the timely completion of schemes and projects for improving and augmenting the electricity system;

g) promote measures for advancing the skills of persons engaged in electricity industry;

h) advise Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter if, in the opinion of the Authority, the recommendation would help in improving the generation, transmission, trading, distribution and utilization of electricity;

i) collect and record the data concerning the generation, transmission, trading, distribution and utilization of electricity and carry out studies relating to cost, efficiency, competitiveness and such like matters;

j) make public from time to time the information secured under this Act, and provide for the publication of reports and investigations;

k) promote research in matters affecting the generation, transmission, distribution and trading of electricity;

l) carry out, or cause to be carried out, any investigation for the purpose of generating or transmitting or distributing electricity;

m) advise any State Government, licensees or the generating companies on such matters which shall enable them to operate and maintain the electricity system under their ownership or control in an improved manner and where necessary, in coordination with any other Government, licensee or the generating company owning or having the control of another electricity system;

n) advise the Appropriate Government and the Appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity; and

o) discharge such other functions as may be provided under this Act.

In addition to above functions and duties, CEA has to perform the following functions in terms of the under mentioned sections of the Electricity Act, 2003:-

Section 3-NATIONAL ELECTRICITY POLICY AND PLAN

1) The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.

2) The Central Government shall publish the National Electricity Policy and tariff policy from time to time.

3) The Central Government may, from, time to time, in consultation with the State Governments and the Authority, review or revise the National Electricity Policy referred to in sub-section (1).

4) The Authority shall prepare a National Electricity Plan in accordance with the National Electricity Policy and notify such plan once in five years.

PROVIDED that the Authority while preparing the National Electricity Plan shall publish the draft National Electricity

Plan and invite suggestions and objections thereon from licensees, generating companies and the public within such time as may be prescribed;

PROVIDED FURTHER THAT THE AUTHORITY SHALL:-

a) notify the plan after obtaining the approval of the Central Government;

b) revise the plan incorporating therein directions, if any, given by the Central Government while granting approval under clause (a).

5) The Authority may review or revise the National Electricity Plan in accordance with the National Electricity Policy.

Section 8 - HYDRO-ELECTRIC GENERATION

1) Any generating company intending to set up a hydro-generating station shall prepare and submit to the Authority for its concurrence, a scheme estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government, from time-to time, by notification.

2) The Authority shall, before concurring in any scheme submitted to it under sub-section (1) particular regard to, whether or not in its opinion:

a) The proposed river-works will prejudice the prospects for the best ultimate development of the river or its tributaries for power generation, consistent with the requirements of drinking water, irrigation, navigation, flood-control, or other public purposes, and for this purpose the Authority shall satisfy itself, after consultation with the State Government, the Central Government, or such other agencies as it may deem appropriate, that an adequate study has been made of the optimum location of dams and other river-works;

b) the proposed scheme meets, the norms regarding dam design and safety.

3) Where a multi-purpose scheme for the development of any river in any region is in operation, the State Government and the generating company shall co-ordinate their activities with the activities of the person responsible for such scheme in so far as they are inter-related.

Section 53 - PROVISION RELATING TO SAFETY AND ELECTRICITY SUPPLY

The Authority may in consultation with the State Governments, specify suitable measures for-

a) protecting the public (including the person engaged in the generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation, maintenance or use of any electric line of electrical plant ;

b) eliminating or reducing the risks of personal injury to any person, or damage to property of any person or interference with use of such property;

c) prohibiting the supply or transmission of electricity except by means of a system which conforms to the specification as may be specified;

d) giving a notice in the specified form to the Appropriate Commission and the Electrical Inspector, of accidents and failures of supplies or transmission of electricity;

e) keeping by a generating company or licensee the maps, plant and sections relating to supply or transmission of electricity;

f) inspection of maps, plans and sections by any person authorized by it or by Electrical Inspector or by any person on payment of specified fee;

g) specifying action to be taken in relation to any electric line or electrical plant, or any electrical appliance under the control of a consumer for the purpose of eliminating or reducing the risk of personal injury or damage to property or interference with its use;

Section 55 (2) - USE, ETC.OF METERS

For proper accounting and audit in the generation, transmission and distribution or trading of electricity, the Authority may direct the installation of meters, by a generating company or licensee at such stages of generation, transmission or distribution or trading of electricity and at such locations of generation, transmission or distribution or trading, as it may deem necessary.

Section 177- POWERS OF AUTHORITY TO MAKE REGULATIONS

1) The Authority may, by notification, make regulations consistent with this Act and the rules generally to carry out the provisions of this Act.

2) In particular and without prejudice to the generality of the power conferred in sub-section (1), such regulations may provide for all or any of the following matters, mainly :-

a) the Grid Standards under section 34;

b) suitable measures relating to safety and electricity supply under section 53;

c) the installation and operation of meters under section55;

d) the rules of procedure for transaction of business under sub-section (9) of section70;

e) the technical standards for construction of electrical plants and electric lines and connectivity to the grid under clause (b) of section 73;

f) the form and manner in which and the time at

which the State Government and licensees shall furnish statistics, returns or other information under section 74;

g) any other matter which is to be, or may be, specified;

(3) All regulations made by the Authority under this Act shall be subject to the conditions of previous publication.

TECHNO-ECONOMIC APPRAISAL OF POWER DEVELOPMENT SCHMES (PERIOD 1.4.2005 TO 31.12.2005)

The Central Electricity Authority, had been according Techno-Economic Clearance/Appraisal to generation Schemes (Hydro & Thermal) and Transmission schemes etc. under the then Electricity (supply) Act, 1948 before the enactment of the Electricity Act, 2003. CEA's consultation u/s 44 (2A) of repealed Electricity (Supply) Act, 1948 was also being conveyed to the concerned State Electricity Boards/ Regulatory Commissions for captive power plants. The Electricity Act, 2003 came into force w.e.f. 10th June, 2003. As per the Electricity Act, 2003, concurrence of CEA is now required for only hydro Generating Schemes. Techno-Economic Clearance of CEA to Thermal generation and Transmission schemes as well as consultation for captive power plants are not required now.

During the year 2005-06, upto 31.12..2005, Central Electricity Authority accorded TEA to 2 No. Hydro Generating Schemes aggregating to a capacity of 742 MW. The details of this scheme is given below :

Details of Hydro Schemes cleared techno-economically by CEA during 2005-06

Sl.No.	Name of Scheme / State/Executing Agency	Installed Capacity (MW)	Estimated Cost	Date of CEA Clearance
1.	Kishanganga HEP in J&K by NHPC (Revised proposal)	3x110 = 330	US $ 3.5 M + . Rs.2609.24 Crores (June, 05 PL) = 2624.36 Crs	31.08.2005
2	RampurHEP in HP by SJVNL	6x68.67 =412	US$13.82+Rs1924.49 Crs (March 05 PL)	16.12.05

RESEARCH AND DEVELOPMENT

IMPORTANT TASKS HANDLED DURING 2005-06 (UP TO DECEMBER, 2005)

1. Perspective Plan for Research & Development

A Standing Committee on R&D for preparation of a Perspective Research and Development Plan for next 15 years and to make recommendations from time to time for optimum utilization of infrastructure, raising of funds and ensuring that the outcome of research results in benefits to the customers and the operational efficiency of the sector was constituted by the Ministry of Power under the Chairperson, CEA. The report of the Committee 'National Perspective Plan for R&D in Power Sector has since been submitted.

An action Plan to carry out R&D on prioritized areas has been prepared by the Standing Committee on R&D. The Action Plan was consist of 23 projects in various areas of power sector. After a series of meetings and deliberations, the Standing Committee on R&D in its 10th meeting held on 21st September, 2005 recommended 8 projects for immediate take up and also decided the mechanism of funding these projects. A combined SFC memo for these projects is being prepared to be forwarded to MoP for allocation of funds.

As regards probable anticipated work up to March 2006, after approval of the SFC Memo and allocation/release of funds the projects will be taken up for research.

2. CEA Chairs at IIT, Delhi

An MOU exists between CEA and the Indian Institute of Technology, Delhi for creation of two CEA Chair Professorships, one in the Center for Energy Studies alternatively Department of Mechanical Engineering and the other in Electrical Engineering Department to fulfill following objectives concerning Power Sector.

- To take part in the academic programs of IIT, Delhi, as full time professors/faculty in the Center for Energy Studies alternatively Department of Mechanical Engineering and Electrical Engineering Department and coordinate HRD programs in the frontier areas of Power Management.
- To develop R&D programs relevant to the needs of CEA and in areas defined in the appendix to the MOU (subject to need based revision.)
- To initiate and develop HRD programs relevant to the needs of CEA and to coordinate courses for any batch of students from the CEA.

The MoU has since been amended to include Ph.D programme in the area of Management Studies and has been further extended for 3 years w.e.f. 13th October, 2004.

Under the programme, a number of topics for research have been forwarded to IIT, Delhi along with names of CEA officer(s) for each of the topics to carry out R&D work in association with the faculty of IIT, Delhi. Methodology for carrying out research work is being formulated.

A number of officers of CEA, CPRI and NPTI are pursuing M.Tech and Ph..D courses at IIT, Delhi under the programme, which will give long term benefits to the Power Sector.

As regards probable anticipated work up to March, 2006, application for M.Tech and Ph.D for the academic year 2006-07 would be invited during December, 2005.

3. Preparation of Data Base

The data/information regarding R&D work in power sector being carried out by various agencies/organizations in Private and Government Sectors in India was obtained and compiled in the form of a Directory and is available on CEA Website. The Directory has been updated based on the revised information obtained from the Research Organisations.

As regards probable anticipated work up to March 2006, it being a continuous process, the updating of Directory will be continued by obtaining revised information from all concerned.

4. Innovative R&D Proposals

Work regarding promotion of innovative methods of electricity generation continued and 11 proposals received from individuals/other Divisions were examined and commented upon.

A view of Badarpur Thermal Power Station

Chapter - 20

BADARPUR THERMAL POWER STATION

INTRODUCTION

Badarpur Thermal Power Station (BTPS) was established by the Government of India in the year 1967 to ensure power availability for meeting growing demand of power in the Northern Region. The installed capacity of BTPS is 720 MW consisting of 3x100 MW and 2x210 MW coal fired units. However, the 3 units of 100 MW each have been derated to 95 MW w.e.f. 11.1.1990 making the present capacity as 705 MW. The station is owned by Government of India and is being managed by NTPC since 1st April'1978 on an agency basis.

2. BTPS is one of the major sources of power supply to Delhi state and since April'1987, the entire energy generated at this station is supplied to the Delhi Vidyut Board now called Delhi Transco Limited (DTL).

GENERATION ACHIEVED FOR 2005-06

3. The generation target for BTPS had been fixed at 5209 MUs at a PLF of 84.3% & Availability of 88% for the year 2005-06. The power station generated 3938.639 MUs at a PLF of 84.65% at an Availability Factor of 87.98% till December'05.

HIGHLIGHTS FOR the period April-December'2005

During the FY 2005-06 (Apr-Dec'05) BTPS stood first amongst all coal based stations of NTPC in respect of evaluation carried out by Corporate Operation Services of NTPC.

During the Calendar Year 2005 BTPS has generated 5221.713 MUs at a PLF of 84.55% with an availability of 88.05% upto Dec.'05

ABT has been successfully implemented in BTPS w.e.f 01.04.05.

Availability Factor of Unit-2 & 5 - 100% in the Month of May to July'05.

Availability Factor of Unit1 & 4 - 100% in the month of June-05.

Availability Factor of Unit-1&3 - 100% in the month of July-2005.

BTPS achieved the financial year partial loading of 4.12 % which is the lowest ever financial year partial loading.

BTPS stood first in awarding e-procurement tender on 20.10.05 covering more than 150 medicines. This e-procurement of medicines at BTPS is one of 10 pilot projects launched by NTPC.

New Pilot Freight Scheme for Badarpur Thermal Power Station to operationalise first ever through Electronic Payment to Railways was launched by Secretary Power on 19.01.05. Payment of freight of the order of 80-85% through this mechanism has already been achieved and BTPS is saving 10% surcharge (Rs.2–3 Cr./ month) on this account.

BTPS is SA - 8000 certified station from Det Norske Veritas (DNV) under ISO Certification.

BTPS awarded Greentech Gold Safety Award for the year 2004-05 on 21.05.2005 by Greentech Foundation for the year 2004-05.

BTPS awarded Greentech Gold Award on 23.10.05 by Greentech Foundation for Environment Excellence for the year 2004-05.

Dry Ash Collection and Evacuation System (DAES)

4. The proposal for Dry Ash Collection and Evacuation System (DAES), 2x210 MW at an estimated cost of Rs.2891.53 lakhs has been planned for achieving 100% Fly ash Utilization. The proposal has been techno-economically cleared by CEA and is awaiting investment approval by the Govt.

ASH UTILISATION

5. As against the target of 3,81,000 MT for the period April to December 2005, 4,14,000 MT of ash was utilized during this period.

6. BTPS achieved a progress of 35.9 lakh bricks in F.Y.2005-06 (upto Dec'05). Bricks are being used in-house for civil constructions & Ash Dyke in a big way. Ash bricks from the station have been supplied in the past to IIT Delhi, US Embassy, CPCB, CPWD and CBRI, Roorkee for their construction works.

7. Dry ash bagging facility has been commissioned & is being run for demonstration.

8. BTPS is also issuing ash directly from ESP Hoppers in 1 MT Jumbo bag & through 05 MT trolley. During the FY 2005-06 (Upto Dec'05) BTPS has issued 5398 MT of ash to various industries.

9. BTPS has entered into an agreement with M/s BILT who has built its own hopper & collection system. During the FY 2005-06 (Upto Dec'05) BTPS has issued 29060 MT of ash.

Chapter - 21

CENTRAL ELECTRICITY REGULATORY COMMISSION

The Central Electricity Regulatory Commission (CERC) an independent statutory body with quasi-judicial powers, was constituted on 25th July, 1998 under the Electricity Regulatory Commissions Act, 1998 and has been continued under Electricity Act, 2003. The Commission consists of a Chairperson and four other Members including the Chairperson, CEA as the ex-officio Member.

Functions:-

Under the Electricity Act, 2003, the Central Commission discharges the following functions, namely:-

a) to regulate the tariff of generating companies owned or controlled by the Central Government;

b) to regulate the tariff of generating companies other than those owned or controlled by the Central Government specified in clause (a), if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one State;

c) to regulate the inter-State transmission of electricity ;

d) to determine tariff for inter-State transmission of electricity;

e) to issue licenses to persons to function as transmission licensee and electricity trader with respect to their inter-State operations.

f) to adjudicate upon disputes involving generating companies or transmission licensee in regard to matters connected with clauses (a) to (d) above and to refer any dispute for arbitration;

g) to levy fees for the purposes of the Act;

h) to specify Grid Code having regard to Grid Standards;

i) to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees.

j) to fix the trading margin in the inter-State trading of electricity, if considered, necessary;

k) to discharge such other functions as may be assigned under the Act.

Advisory Functions:-

The Electricity Act, 2003 further states that the Central Commission shall advise the Central Government on all or any of the following matters, namely:-

a) formulation of National Electricity Policy and Tariff Policy;

b) promotion of competition, efficiency and economy in the activities of the electricity industry;

c) promotion of investment in electricity industry;

d) any other matter referred to the Central Commission by the Central Government.

Revised Electricity Grid Code

CERC has undertaken a review of the Indian Electricity Grid Code (IEGC) in the light of various provisions of the Electricity Act, 2003 and operational experience gain since February, 2000 when the grid code was first implemented by CERC for inter-state transmission. In the revised version, a new chapter on inter-regional exchanges is proposed to be added. The role of State Load Dispatch Centre (SLDC) and Regional Load Dispatch Centres (RLDCs) has been clearly defined for the smooth functioning of the electricity grid in the context of unbundling of State Electricity Boards (SEBs) into separate generating, transmission and distribution companies. A clear chain of responsibility has been proposed for the purpose of energy accounting.

Approval for building Transmission System in Western Region through Competitive Bidding

In September, 2005, CERC has accorded approval to the procedure for selection of building transmission lines covering part of the Western Region system strengthening scheme Package B and C through competitive bidding with 100% private sector participation. The procedure has been proposed by the Central Transmission Utility (Powergrid) as per the advice of the Commission in Order dated 29.07.2005.

Streamlining of Open Access Regulations

The amended regulations of CERC for seeking open access for inter-State transmission system for the purpose of electricity trading came into effect from 1st April, 2005. The regulations have been revised based on the wide consultation with stakeholders. The new regulations have considerably simplified the procedure. It is now possible to obtain open access for electricity trading on day ahead basis as well as on the same day. Charges for part day open access have been reduced. The charges for use of inter regional links have been rationalised. Congestion management is done through electronic bidding. However, the maximum bidding price has been capped

to prevent volatility of transmission price on congested corridor.. The monthly time table has been introduced first time for advance reservation of transmission system for the purpose of electricity trading.

Trading Margin

Taking note of instances of high trading margin and general trend of increasing trading margin being charged by electricity traders, the CERC has proposed to fix a ceiling on trading margin for the electricity traders licensed by it. The objective of the proposal is to ensure that electricity traders do not take undue advantage of shortage scenario in the country.

Advice on various policy issues

There has been constant inter-actions between CERC and Ministry of Power on various policies. The CERC has rendered advice on policy guidelines for development of hydro power, development of transmission system through competitive bidding, tariff policy and National Electricity Policy.

Open Access to Consumers

Chairperson, CERC is ex-officio Chairperson of Forum of Regulators (FOR) in the country and CERC provides secretarial services to FOR. CERC has been playing pro-active role for expediting open access to ultimate consumers and for harnessing of captive generation in the country.

INTER-STATE TRADING IN ELECTRICITY

The Commission had, so far, issued licence for inter-state trading in electricity to total 17 applicants. Of the total, 4 licences have been issued during the current year 2005-06 i.e. upto 30th November, 2005.

At present, 5 licensees are undertaking the trading in electricity. These are as follows:

Sr. No.	Name of the Trading Licensee	2004-05		2005-06 (April-Sept)	
		Volume of Trade (MUs)	% to total volume	Volume of Trade (MUs)	% to total volume
1	Adani Exports Ltd	802.57	6.77	932.16	17.39
2	NTPC Vidyut Vyapar Nigam Ltd	2616.25	22.08	475.31	8.87
3	PTC India Limited	8358.26	70.55	3479.20	64.92
4	Tata Power Trading Company (P) Ltd	69.45	0.59	390.14	7.28
5	Reliance Energy Trading (P) Ltd	-	-	82.77	1.54
	Total volume traded	**11846.54**	**100.00**	**5359.58**	**100.00**

Total volume of electricity traded during the current year 2005-06 (5359.58 MU during April-Sept) is only 45% when compared with the volume of electricity traded during the last year (11846.54 MU). This indicates that the volume of electricity traded during the current year will be almost the same of the volume of electricity traded during the last year. The share of PTC in the total volume of electricity traded has been decreased from last year to the current year i.e. from 71% to 65%. This trend shows that the present share of PTC in total volume of electricity traded may further go down by end of the year 2005-06 due to competition among the electricity traders.

Chapter - 22

APPELLATE TRIBUNAL FOR ELECTRICITY

Under the provisions of the Electricity Act, 2003 the Appellate Tribunal for Electricity has been set up at Delhi to hear appeals against the orders of the adjudicating officer or the appropriate Commission under the Act. Appeals against orders of the Tribunal lie before the Supreme Court of India.

2. The Appellate Tribunal consists of a Chairperson and three Members. In accordance with provisions of the Electricity Act, 2003, every Bench of the Tribunal constituted by the Chairperson includes at least one Judicial Member and one Technical Member. Chairperson of the Tribunal is also a Judicial Member

3. Chairperson of the Appellate Tribunal for Electricity has constituted four Benches. All the four Benches will exercise jurisdiction over the whole of India, except for the State of J&K.

4. The first Chairperson of the Tribunal, Justice Shri Anil Dev Singh assumed office on 13th May, 2005. The other Members of the Tribunal are Justice Shri E.Padmanabhan (Judicial Member), Shri H.L. Bajaj (Technical Member) and Shri A.A. Khan (Technical Member). The Members have also assumed their offices on 13.05.2005.

5. The office of the Tribunal is located at Core-4, 7th Floor, SCOPE Complex, Lodhi Road, New Delhi. The Tribunal has become operational from 21st July, 2005 and has started to hear appeals. As on 31.01.2006, 235 nos. of appeals have been registered. 10 appeals have been disposed off by the Tribunal.

PUBLIC SECTOR UNDERTAKINGS

Chapter - 23.1

NTPC LTD.

1.0 With a view to supplement the efforts of the "states" for quicker and greater capacity addition, Electricity (Supply) Act of 1948 was amended in 1975 to facilitate establishment of large regional power stations in the central sector. In the same year, National Thermal Power Corporation Ltd. was set up by the Government of India with the mandate for planning, promoting and organizing integrated development of thermal power (including Associated Transmission Systems) in the country. The Corporation has rapidly grown to become the largest thermal generating company in India. However, in addition to attaining large size, the operations of the company have also become diverse and are now not limited to thermal power only. Company has diversified into hydro power, power trading, coal mining etc. In order to embody its diverse operations the company has now been rechristened as NTPC Limited. The total approved investment of the corporation as on 23.12.2005 stands at Rs.89, 171.43 crores.

The commissioned capacity of NTPC owned stations, as on 30.11.2005 is 24,249 MW (details enclosed at Annexure-I). Presently, NTPC has to its credit coal based thermal power stations at 13 locations and gas/ liquid fuel based combined cycle power stations at 7 locations. In addition, NTPC has acquired 314 MW of Captive Power Plants of SAIL at 3 locations through formation of Joint Venture Companies with SAIL.

Besides its own stations, NTPC also manages the Badarpur Thermal Power Station in Delhi (705 MW).

2.0 NTPC PERFORMANCE HIGHLIGHTS: as on 30.11.2005

- During the year 2005-06, upto 30.11.2005, a record generation of over 109135 Million Units was achieved, as against the last year's generation of 102087 Million Units during the same period registering an increase of 6.90% over the previous year's period.
- During the year 2005-06 (till November 2005), Six NTPC coal stations namely, Dadri (coal), Korba, Unchahar, Vindhyachal, Talcher Thermal & Kahalgaon achieved more than 85% PLF. Unchahar achieved the highest PLF of 92.74%, followed by Dadri (Coal) (89.97%), Korba (88.83%), Vindhyachal (88.56%), Talcher Thermal (88.50%), and Kahalgaon (85.59%). Talcher Thermal, a takeover project, also achieved the highest ever PLF at 88.50 %. (NTPC has been generating as per the schedule given by RLDCs under the ABT regime).
- During the year 2004-05, NTPC Ltd. has achieved all the targets set for it for "Excellent" rating in the MOU with Govt. of India for the 18th consecutive year.
- The Company is at present implementing NINE power projects with a capacity of 8970 MW viz. 1000 MW Vindhyachal Stage-III in Madhya Pradesh (2x500 MW), 1000 MW Kahalgoan Stage-II Phase-I in Bihar (2x 500 MW), 210 MW Unchahar Stage-III in Uttar Pradesh (1x210 MW), 500 MW Kahalgoan Stage-II Phase-II in Bihar (1x500 MW), 1000 MW Sipat Stage-II in Chhatisgarh (2x500 MW), 1980MW Sipat Stage-I in Chattisgarh (3x660MW), 800 MW Koldam Hydro Electric Power Project in Himachal Pradesh (4x200 MW), 1980 MW Barh TPP in Bihar (3x660 MW), and 500 MW Bhilai Expansion in Chattisgarh (2x250 MW).
- Second & last 500 MW unit of Rihand Stage-II (2x500 MW) has been commissioned ahead of schedule, in September 2005. With this the installed capacity of NTPC as on 30.11.2005 is 24249 MW which includes 314 MW of captive power plants owned by NTPC-SAIL Joint Venture Companies.
- NTPC Hydro Ltd. (A wholly owned subsidiary of NTPC) have signed two implementation agreements one for Rammam Stage-III Hydro Electric Project (90 MW) located in the district Darjeeling in West Bengal on 28.04.05 and another for Lata Tapovan Hydro Electric Project (162 MW) in Uttaranchal on 21.11.05. Both the projects are scheduled for commissioning in the year 2011-2012.
- MOU signed with the Government of Uttaranchal on 21st November 2005 for implementation of Rupsiabagar-Khasiabara Hydro Power Project (260 MW), located in Pithoragarh District.
- NTPC has paid a dividend of Rs.2247.03 crore

NTPC Auraiya Gas Based Power Plant

(including dividend tax of Rs. 268.11 crore) for the year 2004-05.

- During the third consecutive year in a row, the realization has been cent per cent till November 2005. The energy billed for the year 2005-06 (upto November 2005) were Rs.15647.61 crore with realisation of Rs.15761.79 crore i.e. 100.7%.
- A consortium of NTPC, M/s. Geopetrol and M/s. Canoro has been allocated the Arunachal Oil/Gas Block under NELP - V, on 7th. October, 2005.
- NVVN transacted business with 17 state utilities trading in about 833 MUs in 2005-06 (upto 30th November 2005).
- NTPC has made a policy on Corporate Social Responsibility - Community Development (CSR - CD) Policy in July 2004 for expanding its horizon and social vision by addressing the niche domains of socio-economic issues at National level through establishing NTPC Foundation.
- NTPC received IPMA - International Project Management Award for Simhadri for the year 2005. NTPC is the only Indian Company that has been presented this award ever since the inception of IPMA.
- NTPC is being ranked among top ten as employer consistently by various surveys carried out in 2003, 2004 and 2005. M/s Hewitt Associates ranked NTPC 3rd Best Employer in India in 2003 & 2004, Grow Talent Company & Business World rated NTPC 3rd Great Place to Work for in India in 2004 and now in 2005 again NTPC ranked 5th Best Company to work for in India in the survey conducted by Mercer Consulting-Business Today.

3.0 GENERATION PERFORMANCE (as on 30.11. 2005)

3.1 NTPC Stations : As on 30.11.2005, a total capacity of 24,249 MW is under operation at various NTPC stations. This comprises 32 units of 200/210 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhyachal, Dadri, Unchahar and Kahalgaon, 25 units of 500 MW at Singrauli, Korba, Ramagundam Farakka, Vindhyachal, Rihand, Talcher-Kaniha and Simhadri, 6 units of 110 MW at Tanda and Talcher, 4 units of 60 MW at Talcher and 22 Gas Turbines and 10 Steam Turbines at Anta, Auraiya, Kawas, Dadri, Gandhar, Kayamkulam & Faridabad combined cycle power plants and

314 MW (4x60+2x30+1x14 MW) Captive power plants at Durgapur, Raurkela and Bhilai, under Joint Ventures with SAIL.

The generation performance of NTPC Stations has consistently been at high level. The gross generation from NTPC stations during the year 2005-06 (upto 30.11.2005) has been 109135 MUs as against 102087 MUs generated during the same period last year. NTPC achieved a PLF of 84.18% (excluding TTPS and Tanda) with availability of 87.92% during the period.

3.2 Station Managed by NTPC

Badarpur Thermal Power Station (BTPS), Delhi (705 MW) : Badarpur Thermal Power Station (BTPS), Delhi (705 MW) owned by GOI is being managed by NTPC since 1st April 1978. 100% power from this station is supplied to Delhi Power Supply Company Ltd. (DPSCL). During the year 2005-06, upto 30.11.2005, the station has generated 3462 MUs at a PLF of 83.86%.

4.0 COMMERCIAL PERFORMANCE

Settlement of Outstanding Dues of NTPC in F. Y. 2005-06 (upto Nov'05) and payment of current bills

The amount billed for the financial year 2005-06 (upto Nov'05) were Rs.15647.61 crore with realization of Rs.15761.79 crore. Consequently for third successive year, 100% realization of dues against the energy supplied to various beneficiaries was achieved. Consequent to this the total outstanding dues as on 30.11.2005 were Rs.2077.40 crores.

NTPC has been able to liquidate outstanding dues beyond 01.10.2001 amounting to Rs.269.47 crore including dues payable by BSEB linked to TVNL issues. The arrears yet to be settled pertains to the period upto 30.09.2001 payable by BSEB, JSEB and Govt. of NCT Delhi for DESU period to NTPC which are in the advance stage of securitisation under the One Time Settlement scheme. For securitisation of balance dues of BSEB, JSEB and dues of DESU period, following progress has been achieved.

The Hon'ble Prime Minister Dr. Manmohan Singh at the Foundation Stone Laying Ceremony of Bongaigaon Thermal Power Project of NTPC with (L to R) Shri R.V. Shahi, Secretary Power, Chairman NTPC, H.E. The Governor of Assam and Hon'ble Chief Minister of Assam.

(a) Regarding dues payable by BSEB & JSEB

Government of India has issued final orders on 04.11.2004 regarding division of assets & liabilities of undivided BSEB between BSEB & JSEB as on the date of division. Based on this order, balance reconciled dues payable by Bihar & Jharkhand to NTPC as on 30. 9.2001 that are required to be securitised under One Time Settlement scheme are given below :

SEB	Bond Amount (Rs.Crore)
Jharkhand	337.85
Bihar	427.74
Total	765.59

Govt. of Bihar & Govt. of Jharkhand have confirmed to RBI to securitise these dues of NTPC and requested RBI to issue draft notifications vide their letters dated 17.9.2005 & 8.10.2005 respectively. MOP has also requested RBI on 01.12.2005 to issue draft notifications to Govt. of Bihar & Govt. of Jharkhand so that the securitisation of above dues is completed by 31.12.2005.

(b) Dues of Delhi for DESU period

Govt. of NCT, Delhi owe Rs. 1310.83 Crore including 40% surcharge to NTPC as on 30.9.2001 against the dues of DESU period. For settlement of this dues. MOP had put up a proposal to CCEA for securitising the dues of DESU period applying the principal of TPA. CCEA has directed that first a meeting by Secretary (Expenditure) be convened with concerned Officials for settlement. A meeting was convened by Secretary (Expenditure) on 21.10.2005 for discussing the above issue. Since consensus could not be reached, it was decided to convene the meeting again. The next meeting is yet to be convened.

RBI has paid all interests on bonds issued by RBI under One Time Settlement Scheme for the period from 1.4.2005 to 30.9.2005 on all the arrears installment of interest.

All States have also opened and are maintaining LC equal to 105% of average monthly billing.

NTPC is regularly paying cash incentive to various SEBs which are complying with the terms of One Time Settlement Scheme.

Tariff of NTPC stations

NTPC has filed petitions for determination of tariff of its stations for the period 2004-09. Further, NTPC has also filed petitions for revision of fixed charges for the period 2001-04 due to additional capitalisation for its stations. CERC has started issuing orders on the petitions for the revision of fixed charges due to additional capitalisation. Wherever the petitions for additional capitalisation of the stations have been finalised, the hearings of the petitions for the period 2004-09 have also started and it is expected that the tariff of such stations will be finalised by the end of the financial year. The tariff for the Rihand Super Thermal Power Station for the period 2001-04 is yet to be determined by CERC due to stay by Hon'ble High Court of Rajasthan.

Address by Hon'ble Prime Minister at the Foundation Stone Laying Ceremoney of Rajiv Gandhi Combined Cycle Power Project at Kavamkulam

Formation of Power Market Group

MOP has issued guideline for the procurement of power through competitive bidding. To avail of this opportunity, NTPC has formed a separate group to participate in the competitive bidding for capacity additions in future based on the bids invited by various distribution companies.

Declaration of commercial operation of new capacities

During the period April to Nov' 05, following units of NTPC have been declared under commercial operation:

Sl. No.	Power Station/Unit	Date of Operation Commercial
1.	Talcher-II Unit-IV (500MW)	01.08.2005
2.	Rihand-II Unit-III (500MW)	15.08.2005

Power Purchase Agreement has been signed with MPSEB for Sipat - II on 20.06.2005.

5.0 GROSS REVENUE AND PROFIT : NTPC recorded a Gross Revenue of Rs. 13166.9 crore and Net Profit after Tax of Rs.2472.20 crore during the first six months of 2005-06 (i.e. April-September 2005).

6.0 RAISING OF FUNDS FOR CAPACITY ADDITION PROGRAMME

6.1 DOMESTIC BORROWINGS: NTPC has tied up loans from Domestic Banks and Financial Institutions aggregating Rs. 18034 crore as on 15th December 2005 for its Capacity Addition Programme, including Rs.3000 crore LIC Bonds. The cumulative utilization upto 15th December 2005 is Rs. 10914.35 crore. The balance of Rs.7119.65 crore is yet to be drawn.

6.2 DOMESTIC BONDS : In March 2005, the company has issued Series XX Bonds aggregating Rs.500 crore to Life Insurance Corporation of India. The total amount of domestic Bonds outstanding as on 30.11.2005 is Rs.3704.40 crore.

6.3 PUBLIC DEPOSITS: As on 31.03.2005, the cumulative deposits received by the company from 2073 depositors stood at Rs.415.93 crore. The corresponding figures on for the year 2005-06 upto 30.11.2005 are 1263 depositors aggregating Rs.86.98 crore.

6.4 K-EXIM EXPORT CREDIT: During the year 2004-05, NTPC signed an agreement for Buyer's Credit facility of USD 354.25 million extended by the Export Import Bank of Korea, BNP Paribas Bank and HSBC Bank to finance the Steam Generator Package for Sipat Super Thermal Power Project Stage-I. The Export Import Bank of Korea, in addition to being a direct lender, has also guaranteed the credit facility. The loan carries a provision for payment of interest at fixed rate of 4.31% p.a. The all-in-cost of the credit is 5.06% p.a. The maturity of loan is 16 years. The disbursements under this credit facility have begun in the year 2004-05 and NTPC has drawn an amount of USD 50.219 million as on 22.12.2005.

6.5 JBIC Loan for North Karanpura : A loan of JPY 15.916 billion was signed on March 31, 2005 to part finance the capital expenditure to be incurred at proposed North Karanpura Project (3x660 MW). This loan is extended under Official Development Assistance Scheme of JBIC. The rate of interest is 0.75% p.a. (fixed). The loan has a maturity of over 15 years with repayment period of 10.5 years and disbursements are allowed over a period of 5 years. The loan is backed by a Government of India guarantee.

6.6 Swedish Export Credit : A Buyers' Credit facility agreement of USD 41.56 million was signed on 9th June 2005 to finance the Power Transformer Package for the Sipat Super Thermal Project Stage-II. The credit is extended by BNP Paribas Bank and HSBC Bank and is guaranteed by the Swedish Export Credit Agency, EKN. The disbursements from this credit have commenced and as on 22.12.2005, an amount of USD 1.65 million has been utilised. The disbursements shall close by April 2007. The loan carries a provision for payment of interest at fixed rate of 3.85% p.a. The tenure of the loan is 7 years. An important feature of this loan is that the facility is extended on stand-alone basis and is not backed by any Government of India guarantee.

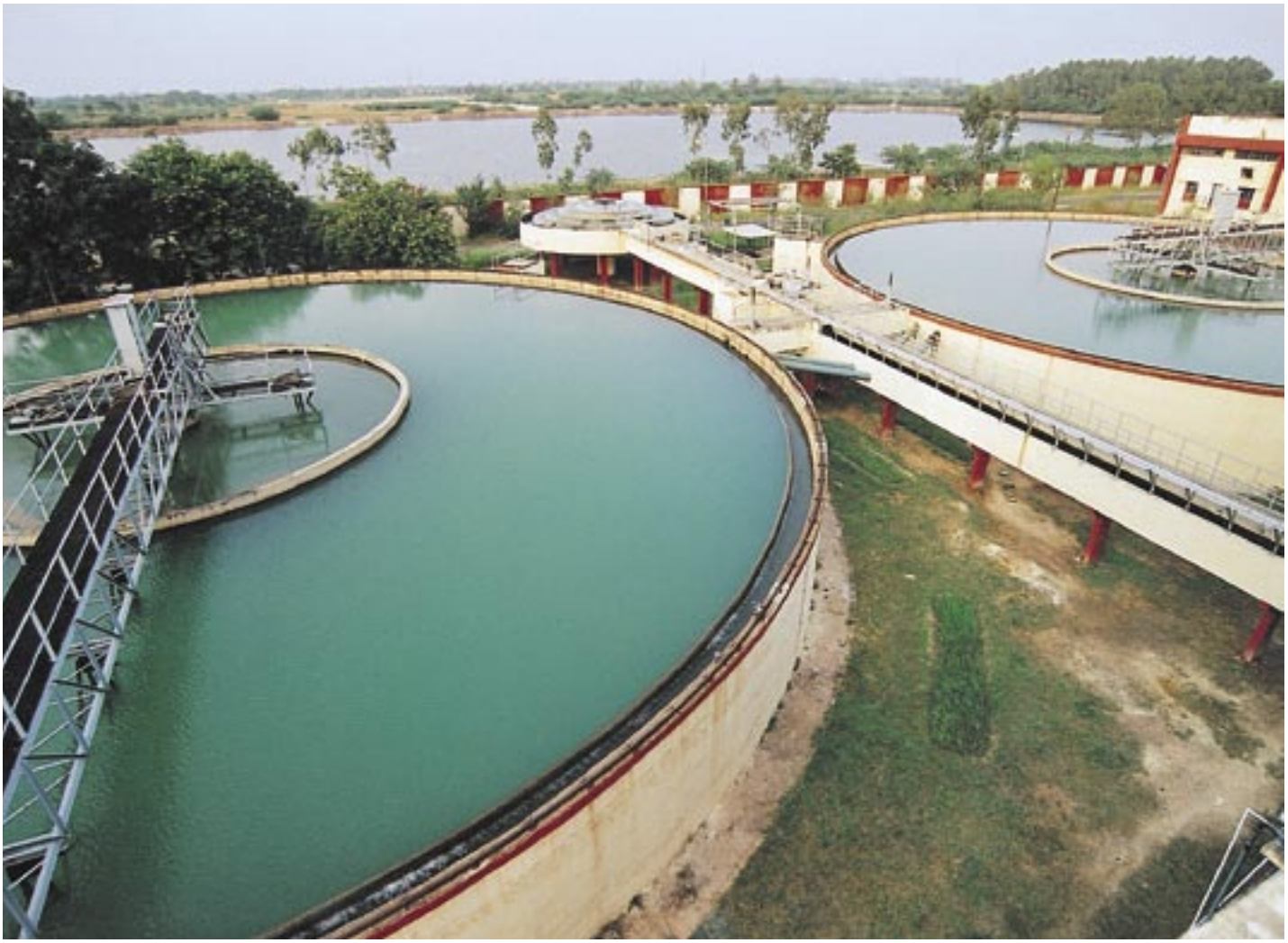
6.7 INITIAL PUBLIC OFFERING (IPO): NTPC made a Public Issue of 865,830,000 equity shares o f Rs.10 each for cash at a price of Rs.62 per share aggregating Rs.5368.14 crores consisting of fresh issue of 432,915,000 equity shares and an "Offer for Sale" of 432,915,000 equity shares by the Government of India. A sum of Rs.2,684 crores was remitted to the Government and balance was retained by the company. Out of proceeds of Rs.2,684 crores retained by the company, a sum of Rs.1042.2 crores has been utilized till 31st March 2005 for part financing the capital expenditure of the projects specified in the prospectus and the remaining amount will be similarly utilized progressively.

7.0 MOU PERFORMANCE : NTPC is the first power sector corporation to have signed a Memorandum of Understanding (MOU) with the Govt. of India and has a consistent record of surpassing the set targets in MOU year after year. NTPC achieved the Excellent targets set under the Memorandum of Understanding (MOU) signed with GOI and achieved Excellent Rating for all the 18 years upto 2004-05 since inception of the MOU system.

8.0 CORPORATE PLAN : In tune with the transformation roadmap, the corporate plan of NTPC for the period 1997-2012 has been updated to 2002-2017 and the updated Corporate Plan has been approved by company's Board of Directors. NTPC's Corporate Plan envisages NTPC to be a 56,000 MW Plus Company by 2017 comprising 42,000 MW coal and gas based capacity, 11,000 MW hydel capacity, 2000 MW nuclear capacity and 1000 MW from non-conventional sources. The ownership profile of

the total capacity portfolio shall comprise 48,000 MW on Company's own Balance Sheet, 6,000 MW through Joint Ventures, 1,000 MW through Domestic Subsidiaries and another 1,000 MW through Overseas Ventures. However, later the company has set for itself a revised target of 66,000 MW plus by 2017. The plan also envisages NTPC's presence in coal mining, washeries, LNG, power distribution and trading businesses. Further, major thrust has been laid on Research & Development and integrated Enterprise Resource Planning. In essence, by 2017 NTPC aims to have presence in many countries through different business vehicles and a combined group annual turnover of Rs.1400 billion.

8.1 CAPACITY ADDITION PROGRAMME : Notably, work on 8,970 MW capacity addition for benefits in X and XI Plan is progressing concurrently. During the X Plan period, 4000 MW has already been commissioned. Construction work is going on in 8,970 MW capacity, comprising 3,710 MW due for benefits in X Plan and 5,260 MW due for benefits in XI Plan. During the year 2004-05, two units of 500 MW at Talcher-II Project, one unit of 500 MW at Ramagundam-III Project and one unit of 500 MW at Rihand-II Project were commissioned ahead of schedule. Further, another 500 MW unit has been commissioned at Rihand-II in September, 2005. Thus, the total generating capacity of the company has increased from 21,435 MW to 23,935 MW. In addition to this, NTPC has formed 50:50 equity participation JVs with SAIL, which consist of CPPs at Durgapur, Rourkela and Bhilai aggregating 314 MW. Thus, the total installed capacity of NTPC is 24,249 MW.



NTPC Auraiya

COMMISSIONED. ON GOING & NEW PROJECTS IDENTIFIED BY NTPC FOR BENEFITS DURING 10™ & 11™ PLAN PERIOD

Sl. No.	Project (Fuel)/ State (Capacity in MW)	Capacity Addition (MW) X Plan (2002-07) & XI Plan (2007-12)
A. COMMISSIONED PROJECTS		
1	Simhadri (Coal), A.PJ10001	500
2	Talcher-II (Coal), Orissa (2000)	2000
3	Ramagundam-III (Coal), A.P. (500)	500
4	Rihand-II (Coal), U.P. (1000)	1000
TOTAL COMMISSIONED (A)		**4000**
B. ON GOING PROJECTS		
1	Vindhyachal-III (Coal), M.P. (1000)	1000
2	Kahalgaon-II Ph-I (Coal), Bihar(IOOO)	1000
3	Unchahar-III (Coal), U.P. (210)	210
4	Kahalgaon-II Ph-II (Coal), Bihar (500)	500
5	Sipat-II (Coal), Chattisgarh (1000)	1000
6	Sipat-I (Coal), Chattisgarh (1980)	1980
7	Koldam (Hydro), H.P. (800)	800
8	Barh (Coal), Bihar (1980)	1980
9	Bhilai Exp. (Coal), Chattisgarh (JV) (500)	500
TOTAL ON GOING PROJECTS (B)		**8970**
C. NEW PROJECTS		
I. Projects for which Main Plant Bids have been received		
1	Kawas-II (Gas), Gujarat (1300)	1300
2	Gandhar-II (Gas), Gujarat (1300)	1300
3	Loharinag Pala (Hydro), Uttaranchal (600)	600
New Projects Sub Total-1		**3200**
II. Projects for which FRs have been prepared and clearances/approvals are in progress		
4	Tapoban Vishnugad (Hydro), Uttaranchal (520)	520
5	LataTapovan (Hydro), Uttaranchal # (162)	162
6	North Karanpura (Coal), Jharkhand (1980)	1980
7	Nabinagar (Coal), Bihar (JV) (1000)	1000
8	RGCCPP-II (Gas), Kerala (1950)	1950
New Projects Sub Total-11		**5612**

III. Projects for which FRs/DPRs are under preparationl		
9	Ennore (Coal), Tamil Nadu (JV) (1000)	1000
10	Farakka-lll (Coal), West Bengal 1500)	500
11	Rammam-lll (Hydro), West Bengal # (90)	90
12	Integrated Project in Chattisgarh Area (Coal) (4000)	800
13	Hutong-ll (Hydro), Arunachal Pradesh (1250)	1000
14	Kalai l&ll (Hydro), Arunachal Pradesh (2650)	1040
New Projects Sub Total-III		**4430**
NEW PROJECTS TOTAL (C)		**13242**
GRAND TOTAL (A+B+C)		**26212***

* 4000 MW already commissioned. Note : JV - Joint Venture.
# Thru NTPC Hydro Ltd. - a wholly owned subsidiary of NTPC.

NTPC officials giving away relief material for Tsunami victims

8.2 Hydro Power Projects

Koldam Hydroelectric Power Project (HEPP) (4x200 MW) : The project activities for construction are progressing in full swing. Excavation work for various project components such as dam, spillway, approach channel, De-silting chambers is in progress. Excavation for Power Intake, Switchyard has been completed and that of Power House is nearby completion. Grouting work in Dam area is in progress. Concreting work in Power House commenced in Nov.05.

Loharinagpala HEPP (4x150 MW) : Government order accorded in Sep.05 in respect of forest land. Section IX notices have been issued in Sep./Oct.05 for private land. Proposal for acquisition of township land has also been submitted. Work on approach road for adits is going on. Work for Construction of adits has been awarded in Jul. 05. Work for construction power have begun. Bids have been invited for Head Race Tunnel (HRT), Underground Power House and Penstock packages. Bids for construction of barrage and desilting chamber have been opened on 16.12.2005.

Tapovan-Vishnugad HEPP (4x130 MW) : Ministry of Environment and Forests (MOEF) clearance have been obtained for forest land. Land acquisition for private land is under progress. Construction of approach roads to Power House and Barrage is under progress. Work on construction power is under progress. Bids have been invited for HRT package.

Rupsiabagar-Khasiabara HEPP (260 MW)*: Implementation agreement for preparation of Detailed Project Report (DPR) and then development of Rupsiabagar-Khasiabara HEPP (260 MW) was signed with the Government of Uttaranchal on 21st November 2005. Site specific studies and investigations have been taken up.

In the activities of NTPC's subsidiary company 'NTPC Hydro Limited' which is for development of small and medium scale hydropower projects, the work of DPR preparation for Lata-Tapovan H.E.P.P. (3x54 MW) has already been completed and approved by the Board. The DPR was submitted to Central electricity Authority (CEA) on 05.07.05 for obtaining Techno-Economic Clearance (TEC). The hydrology for the project has been cleared by Central Water Commission (CWC), Power Potential, Geological & Civil Design are under discussion with CWC & CEA.

The updation of DPR for Rammam Stage-III H.E.P.P (90 MW), originally prepared by WBSEB, has been taken up and is in progress.

8.3 LNG Sourcing for proposed Gas based power stations:

Kawas-II & Gandhar-II:

* NTPC conducted an International Competitive bidding process both for Liquified Natural Gas (LNG)/ Natural Gas (NG) suppliers and Service providers.
* Bids were opened on 14th May 2004 and based on the specified criteria, Reliance India Ltd. (RIL) emerged as the successful bidder.
* Offer of RIL was unconditionally accepted by NTPC vide its LOI dated 16th. June 2004 issued to RIL.
* Contract document provides for commencement of gas supply within a window of 28-40 months which translates to Dec 2007-Dec 2008.

Raiiv Gandhi Combined Cycle Gas Power Project (Kavamkulam):

* Heads of Agreement (HOA) with GAIL has been initialled.
* The status regarding LNG Sourcing/ Re-Gasification terminal is as under:

- GAIL has signed LNG SPA with NIGEC, Iran in June 2005 for 2 MMPTA of LNG. As per SPA, delivery would start in end 2009. Further negotiation is on with NIGEC for additional 2.5 MMPTA of LNG, in which GAIL's share would be 40%. NTPC is pursuing with GAIL for getting the composition of the proposed Regassified LNG (RLNG) for design of equipments.
- Petronet LNG Ltd. (PLL) has taken up construction activities of Re-gasification terminal at Kochi.

LNG Value Chain :

In order to have the affordability of Gas prices for power generation, compatible with other fuel options, ie. coal, NTPC is considering participation in different elements of LNG Value Chain through equity participation/ strategic investments with prospective partner in India and abroad. This includes participation in oil/gas exploration, liquefaction plants, shipping ventures, re-gasification plants. As part of this strategy, NTPC is also open to offer equity stakes to the prospective partners in its proposed power stations.

8.4 Coal Mining and Coal Washeries Allotment of Coal Mining Blocks :

* NTPC will target to develop coalmines with aggregated production capacity of 50 MTPA.

* NTPC has applied for allocation of 16 nos. of coal blocks, out of which one Block, namely Pakri-Barwadih, was allotted to NTPC in October 2004, under Govt. dispensation mode. Four blocks namely Kerandari, Chatti Baridatu, Chhatrasal and Dulanga were made in Jan. 2006 under captive Mining route. Another block namely Talaepali as a prt of lara integrated coal-mine cum power project.
* NTPC is rigorously pursuing with MOC for allotment of these coal blocks.
* Recently, Government of India has taken an 'in-principle' decision to allocate the following coal blocks to NTPC / its Joint Venture with Coal India Limited :

(1) Kerandari, North Karanpura - 228 MT;
(2) Chatti Bariatu, North Karanpura - 243 MT;
(3) Chattrasal, Singrauli -150 MT;
(4) Dulanga, Ib Valley - 260 MT;
(5) Talaipalli - 965 MT;
(6) Brahmini-1900MT.
(7) Chichro Patsimal - - 356 MT.

Joint Venture with GIL / its subsidiaries :

* NTPC is pursuing with CIL for developing of coal mine blocks under JV route at Gajmara (Orissa), Simhadri Expansion, and/or Darlipali (Orissa).

Selection of Joint Venture Partner for coal mining:

* NTPC has appointed a Consultant for upfront selection of JV Partner(s) for developing of coal mining blocks to be allotted under captive mining route. Finalization of QR, Bid documents, etc. are in progress.

Pakri-Barwadih - Brief Status of activities :

* Request for Notification under Section 4(1) for land acquisition under Coal Bearing Act (CBA) has been forwarded to Govt. Press for publication, by Ministry of Coal (MOC).
* Application for Site clearance submitted on 23.11.05 to MOEF.
* Pre monsoon data for Environmental Impact Assessment (EIA)/ Environment Management Plan (EMP) studies completed & post monsoon studies including hydro geological studies under progress.
* Geological modeling completed. Conceptual surface master plan prepared and Final Mine Plan expected in January 2005.
* Feasibility Report (Preliminary) for establishing of Rail Link from Pakri Barwadih has been prepared.
* Block Boundary received from Coal Mine Planning and Design Institute (CMPDI). Matter has been taken up with ONGC for resolving of the overlapping with Coal Bed Methane (CBM) Boundary issue.
* Expression of Interest (EOI) for selection of Mine Developer-cum-Operator (MDO) was published on 14.10.2005.

8.5 Joint Ventures

A. Existing Joint Ventures

UTILITY POWERTECH LTD. (UPL) (a Joint Venture Company of NTPC & Reliance Energy) which was formed to take up assignments of construction, erection and supervision in the power sector and other sectors in India and abroad is progressing satisfactorily-. The total income and profit for the year 2004-05 have been Rs1,124 Million and Rs 57 Million (aftertax) respectively. Company has declared 150% (Rs.30 Million) dividend for the last financial year (2004-05).

NTPC ALSTOM POWER SERVICES PVT. LIMITED (NASL): NTPC has formed a JV Company with ALSTOM POWER GENERATION AG, (formally ABB KRAFTWERKE AG), under the name of "NTPC ALSTOM POWER SERVICES PVT. LIMITED", (NASL) for taking up Renovation & Modernization assignments of Power Plants both in India and abroad. Total income and profit (after tax) for the year 2004-05 is Rs.1,021 million & Rs 21 million respectively. A dividend of 10% (Rs 6 Million) has been declared by NASL for the year 2004-2005.

PTC INDIA LTD. (PTC), a Joint Venture Company with NTPC holding 8% equity, is purchasing power from

NTPC Korba ash brick manufacturing unit

power projects and selling the same to SEBs requiring power. Turnover of the company for the year 2004-05 was Rs.2037.2 crore and profit after tax Rs.24.0 crore.

NTPC-SAIL Power Company Pvt. Limited (NSPCL) is a joint venture formed by NTPC and SAIL with 50% equity from both the organizations, in March'01 to takeover the Captive Power Plant (CPP)-II located at Durgapur & Rourkela Steel Plant having installed capacity of 120 MW each for supplying power to the respective steel plant on captive basis. The Total Income of NSPCL during 2004-05 was Rs.132.2 Cr. Profit (after tax) of the company for the year 2004-05 was Rs.23.3 Cr.

Bhilai Electric Supply Company Private Limited (BESCL) is another joint venture formed by NTPC & SAIL with 50% equity from both the organizations, in March'02 to takeover the Captive Power Plant (CPP)-II located at Bhilai Steel Plant having installed capacity of 74 MW for supplying power to the Bhilai Steel Plant on captive basis. The Total income of BESCL during 2004-05 was Rs.60.7 Cr. Profit (after tax) of the company for the year 2004-05 was Rs.6.1 Cr.

NTPC and TNEB have formed a Joint Venture Company under the name of "NTPC Tamil Nadu Energy Company Ltd". The company was incorporated on 23.05.2003 to set up a coal-based power station of 1000 MW capacity, at Ennore, using Ennore port infrastructure facilities. Site Specific & other studies have been completed. Feasibility Report (FR) is under finalization. Coal Linkage/ Coal Mine Allocation and other key tie-ups/clearances are being pursued.

B) Activities for New Joint Ventures

i) Joint Venture with Railways

NTPC has signed an MOU with Ministry of Railways on 18.02.2002 for setting up power plant(s) upto 2000 MW capacity to meet the traction and non-traction power requirements of Railways. After studying various sites in India, it has been decided to setup a 1000 MW (4x250 MW) power plant at Nabinagar, in Bihar. FR for this project has been prepared. PIB meeting for the project was held on 13.02.04. Note for CCEA approval has been prepared by MOP and is now awaiting clearance from the Ministry of Railways.

ii) Takeover of Muzaffarpur Thermal Power Station (MTPS)

After a series of meetings were held with BSEB and Govt. of Bihar (GoB) for the transfer of the MTPS to NTPC on a long-term lease, it was indicated by GoB in the meeting held on October 2005, that BSEB will not transfer the Station to NTPC but would form a Joint Venture with NTPC and operate the Station through JV Company.

Memorandum of Agreement (MOA) has been signed on 26.12.2005 between the Government of Bihar, BSEB and NTPC for the takeover of MTPS by a proposed joint venture of NTPC and BSEB.

iii) MOU with REC & Agreement with State Electricity Board

An MoU was signed in between NTPC and REC to carry out Electrification of Rural villages and households, one Block each in the State of West Bengal and

NTPC is in discussion with Govt of Gujarat for allocating suitable distribution area along with 1000 MW Pipavav Power Project which is likely to be setup in Joint Venture with Gujarat Power Corporation Ltd.

Distribution Area Around NTPC Stations : Korba Revenue District

To take up distribution area around NTPC Stations, Korba has been identified as one of the Option by setting up parallel Electrical Distribution network. Feasibility report prepared for Parallel distribution in Korba Revenue Distt. Distribution License shall be applied on receipt of allocation of power from MOP.

B NTPC Vidyut Vyapar Nigam (NVVN): NTPC Vidyut Vyapar Nigam Ltd. (NWN) was formed by National Thermal Power Corporation Limited (NTPC), as its wholly owned subsidiary to cater to and deal with the vast potential of power trading in the country and optimum capacity utilization. It was incorporated on 1st November 2002. The Company was granted category "E" Trading License by Central Electricity Regulatory Commission (CERC) on 23rd July 2004. NWN crossed the trading volume of 1000 MUs in October 2004 and moved to category "F" in 2004-05.

NWN transacted business with 17 State Utilities spread all over the country upto 30.11.05.Major sellers of power (GRIDCO/ WBSEB/ DVC/ ASEB/ UPCL) have resorted to tender and some traders have quoted high rate, thereby increasing cost of power. NWN decided to refrain from bidding high rate and this decision has adversely affected trading volume.

An initiative has been taken by NTPC through its wholly owned subsidiary NWN, to examine various issues related to the feasibility of whole sale Power Exchange at National Level in India, which will provide a transparent and neutral platform for promoting competition in supply of electricity at wholesale level and thus help development of power sector.

C **NTPC Hydro Limited (NHL).:** NTPC has formed a wholly owned subsidiary company for taking up small hydro projects of capacity up to 250 MW. NHL has entered into a Memorandum of understanding with the Government of Uttaranchal for development of 162 MW Lata-Tapovan Hydel Project and with the Government of West Bengal for implementation of 90 MW Rammam Stage-III, subject to techno-economic viability.

9.0 CONSULTANCY SERVICES : The Consultancy Wing (CW) of NTPC Ltd. has surpassed all previous records in order bookings and has secured 55 Orders valued at Rs. 187.86 Crores as on 30/11/2005. This Wing has bagged its largest ever single order, of Rs. 55 crore, from Konaseema Gas Power Ltd. for O&M Management services for 445 MW CCPP at Devarpalli, A.P for a period of ten years. Currently, it is involved with providing consultancy for projects totaling approximately 22,250 MW and major orders received are related to:

- O&M Management systems
- Project Management & Construction supervision

A policy was framed to conduct computer simulated business games competition across the company named "Business Minds". A Total of 166 teams participated in the competition.

The orientation program of the Executive Trainees selected commenced with inauguration by Minister of Power, Govt. of India and other VIPs from Central Power Sector. This was followed by a gala get-together of all the inductees with CMD, Directors & other senior executives & their families. This has been a great integrator of new entrants to the family of NTPC.

Benchmarking Activity was taken up from 2003 in HR. In the year 2004-2005, 04 areas were benchmarked and the recommendations are being implemented, these areas are:

a. Training impact assessment and adoption of Training evaluation Model.
b. Leadership Development Model & Systems
c. Executive Recruitment Systems & Processes
d. Customer Orientation in HR Systems & Processes.

For all these benchmarking projects world class companies like GE, ICICI, Wipro, TISCO, ONGC, INFOSYS, ITC, HDFC, TATA TELECOM, Bharati Telecom, Aditya Birla group etc were taken as benchmark partners.

During the year the Leadership Development initiative called Leads was also launched. All AGMs and GMs were covered in leads centre-Assessment and Development centers wherein their competencies were assessed through multiple exercises by multiple external assessors. The Leads circle-3600 assessment is presently on-going for EDs and GMs. The Leads system has been launched with a view of developing the future leaders of the organization from within.

10.0 REHABILITATION & RESETTLEMENT : NTPC is committed to help the populace displaced for execution of its projects and has been making efforts to improve the Socio-economic status of Project Affected Persons (PAPs). In line with its social objective, the company has focused on effective resettlement and rehabilitation (R&R) of PAPs and also community development works in and around the projects.

During the year "NTPC Resettlement and Rehabilitation Policy" was revised in June 2005 in light of experience and learning gained over the last 25 years in the field of Resettlement and Rehabilitation (R&R) and aligning with GOI "National Policy on Resettlement and Rehabilitation for Project Affected Families-2003 (NPRR-2003)" after an intensive consultation exercise with various stakeholders including representatives from the Government, international financing institutes and sister PSUs.

Implementation of approved Rehabilitation Action Plans (RAPs) for Anta-II, Koldam, Sipat and Barh projects is in progress. Socio-Economic Survey (SES) for North Karanpura, Nabinagar, Loharinag-Pala, Tapovan Vishnugad and Unchahar Stage-III has been completed. Formulation of Rehabilitation Action

Plan for additional ash dyke for Talcher-Thermal, Unchahar Stage-III and Loharinag-Pala projects is under progress. SES for Pipavav, Korba Stage-III and Pakri Barwadih mining project is Likely to be awarded by March 2006. Further, Social Impact Evaluation (SIE) for Simhari project where R&R activities have been completed is likely to be awarded during this financial year to evaluate the impact of R&R activities undertaken by NTPC.

11.0CORPORATE SOCIAL RESPONSIBILITY : NTPC brought out its Corporate Social Responsibility - Community Development (CSR - CD) Policy in July 2004 for expanding its horizon and social vision to

make its impact felt at national level by addressing the niche domains of socio-economic issues at National level through establishing NTPC Foundation. For this a dedicated CSR group has been established in the Organisation.

Amongst the various objectives of the NTPC Foundation, thrust has been initially given to facilitate implementation of Self Income Generating Schemes (SIGS) by Physically Challenged Persons (PCPs)/ PCP Groups.

In line with the above, a notification was published in all National Newspapers in June 05, inviting schemes and ideas for Self Generating Schemes to be implemented by PCPs. Encouraging response has been received to the notification.

Through a second notification, published in the National Dailies on 1st Nov. 2005, PCPs/PCP Groups have been invited to submit proposals for implementation of SIGS, wherein the NTPC Foundation would provide appropriate financial assistance. A basket of DPRs have been made available on the NTPC website to assist interested/willing PCPs in submitting their proposals. The responses that have been received are under active examination by the Foundation.

In order to facilitate economic self-reliance of PCPs, NTPC Foundation is in the process of establishing a Development Centre for PCPs for providing requisite support, for which 10 acres of land has been acquired and earmarked at NOIDA.

12.0 ISO CERTIFICATION : NTPC's pursuit for excellence with good system orientation has resulted in Engineering Division, Operation Services Division, Consultancy Group, Power Management Institute (PMI), Noida Services Group, Contracts & Materials Division, SCOPE HR Division, Commercial Division, Vigilance Department, and Corporate Communications Department the achieving certified ISO-9000 Quality Management Systems. All stations of NTPC (including Badarpur) have also achieved the same. All Stations of NTPC (including Badarpur) and Corporate Environment Monitoring & Ash Utilisation Group have implemented ISO-14001 certified Environment Management Systems (EMS). All Stations of NTPC (except remaining two namely Badarpur and Sipat) have implemented OHSAS-18001 certified Occupational Health and Safety Assessment Systems (OHSAS).

13.0 ENERGY CONSERVATION : Organised energy conservation activities in NTPC started in 1992 by setting up energy conservation groups both at Corporate

Level and at all the project sites of NTPC. Energy auditing, holding awareness campaigns on energy conservation periodically and promotion of alternative and non-conventional energy technologies are the main functions of these groups. During the year 2004-05, 101 nos of in-house energy audits of various systems of NTPC power projects were conducted and annual savings of Rs. 41 crores were achieved as against the target of Rs. 26 crores. This year 105 in-house energy audits have been planned to be carried out in NTPC projects out of which 76 audits have been completed till end of November 2005 and another 29 energy audits would be completed by the year-end. It has been targeted that during the year 2005-06, energy savings to the tune of Rs. 30 crores on account of such efforts towards energy conservation would be achieved.

In addition to the in-house energy audits, NTPC has also now started undertaking energy auditing of external utilities. During the year 2004-05, energy audit of auxiliary power consumption of Rayalaseema Power Station of APGENCO was conducted. This year also, NTPC has submitted a number of bids for conducting energy audits of outside utilities. At present, evaluation process is going on of various bids.

14.0 RESEARCH & DEVELOPMENT : NTPC R&D Center continued to provide necessary scientific services to all the power stations to improve the availability through regular health & life assessment studies of coal & gas based stations, condition monitoring of different equipment, corrosion control studies, Failure analysis, etc.

R&D facilities, which were created during late eighties and early nineties, are in the process of being upgraded including creation of new Expert groups in respect of IPR, New Materials & Alloys, Welding, Computer Modeling, etc. and for this a consultant is being identified.

All the four projects identified under MOU with GOI for 2005-06 are progressing well and will be completed in time.

R&D is developing Fly-Ash based product for part replacement of cement to be used for general building construction by the common man. This will be a better product having both early as well as long term strength. This will greatly increase use of fly ash.

R&D has developed a cost effective Fly-ash based utensil cleaning powder which is manly based on Satritha, which is an organic product and thus user friendly.

R&D is working to develop a technique to detect on-line turbine blade damage. BARC had developed the technique of detecting online turbine shaft cracks. R&D undertook a project of developing software for both the techniques that would be installed at NTPC Stations. R&D is entering into an MOU with BARC for development of software for on line turbine blade damage detection & shaft crack detection to reduce the maintenance cost and prevent catastrophic damage to turbo generator.

R&D has developed novel method for converting straight vegetable oil (obtained by crushing seeds of Jathropa plants) to Bio-Diesel which can be used by villagers. This is going to be demonstrated to nearby village panchayat in January 2006. This will be used for power generation in remote villages.

In the changing paradigm in power sector and NTPC's quest to be a global energy major, Energy Technologies (ET) center has been set up with a well-defined mandate to develop and innovate cutting edge technologies to meet the ever changing scenario. The center will work in both fundamental and applied fields with the ultimate objective of commercializing the technologies both within and outside. Setting up of this center by NTPC meets a long-term need of such a center in the power sector in India. The NTPC Board approved the formation of center in April 2004 with a mandate that it has to be a WORLD CLASS research institute.

ET's proposed organization structure enjoys a tripodal model with Technology Development Division at the center of a Tripod, supported by Engineering Specialist Division, Research Centers and Special Analysis and Computational Centre (SACC) forms the core of the proposed ET center. The five destinations for power sector viz. Reduction in cost of power, Achieving the

Feroze Gandhi Unchahar Thermal Power Project of NTPC

Energy-Environment Harmony, Strengthening the Power Delivery Infrastructure, Enabling Digital Society and Managing Global Sustainability will be realized through this center.

Energy Technologies targets to focus on setting up Centres of Excellence (CoEs) and indigenisation of technologies. Developing technologies through collaborative research with best of the R&D and academic institutions in India and subsequently it will be extended to other global leading institutions. The institutions where collaborative research work is being conducted are National Chemical Laboratory (NCL) Pune, Agharkar Research Institute (ARI) Pune, IIT Mumbai, University Institute of Chemical Technology (UICT) Mumbai, Central Salt & Marine Chemicals Research Institute (CSMCRI) Bhavnagar and National Environmental Engineering Research Institute (NEERI) Nagpur. The research areas include Artificial Neural Network based optimization, Computational Fluid Dynamics (CFD) modeling of boiler and cooling tower, Multi-composition Ammonia Liquor Absorption Engine (MALAE) cycle, Carbon Sequestration etc. Under this collaborative arrangement total 12 projects are identified to be completed in a time span of 18 to 48 months. Further, India along with 12 other countries (now 21) is a founder member of "Carbon sequestration Leadership forum" (CSLF).

Around 75 Acres of land has been acquired at Greater Noida for the construction of ET Building.

15.0 TECHNOLOGY ABSORPTION : Capacity addition of over 1,50,000 MW is envisaged in the country during the XI and XII Plan periods. More than two third of this capacity addition is expected from thermal power stations. Amongst several factors affecting pace of capacity addition, unit size is considered to be very important. With this in view, adopting higher unit sizes in the country was considered for accelerating pace of capacity addition as required. The first beginning in this regard has already been made by NTPC by going in for 660 MW size units in Sipat-I and Barh projects to be followed by North Karanpura.

However, to decide on still higher size of thermal units, NTPC has examined the following aspects :

- Technologies available worldwide, their maturity levels and availability of technologies for adoption in India.
- Status of technology availability with BHEL for implementation in Indian context.
- Strategy for induction of higher size units in association with BHEL including transfer of technology.
- Efficiency and other benefits, likely project cost, techno-economic analysis vis-a-vis other options.

NTPC is of the opinion that 800 MW unit size which is considered to be an ultimate size for Indian coal can be adopted. However, International Consultant's assistance would be required in technology scan, carrying out the basic engineering including preparation of RDM, Techno-economics and finalization of the steam parameters, equipment sizing, interface parameters and review of technical specifications.

16.0 ENVIRONMENT MANAGEMENT : NTPC with the goal of achieving sustainable development of the power sector in the country has taken a number of dedicated and growth oriented measures for Environment Management in its various business units. It is actively pursuing the Charter on Corporate Responsibility for Environmental Protection (CREP) released by Ministry of Environment and Forests for various industries including Thermal Power Plants. A number of measures have been taken for further improving performance of stations especially in the areas of stack emissions and effluents discharged.

To further enhance the performance of Electro Static Precipitators (ESPs) in order to maintain stack particulate emissions within the stipulated limits on sustained basis, trial study is being conducted in one Unit at NTPC - Farakka by conditioning flue gas with Ammonia. Its long-term effects are being studied in the Unit for evaluating the efficacy of the technology to maintain low emissions in the Indian context.

As a proactive measure, in a number of stations recycling/reuse systems have been installed and commissioned to conserve water. Ash Water recycling system has been installed & commissioned at Ramagundam, Simhadri, Rihand, Talcher Kaniha, Talcher Thermal, Kahalgaon, Korba and Vindhyachal. Also, Effluent Treatment Plant (ETP) has been installed & commissioned at Ramagundam, Kahalgaon,

Kayamkulam, Farakka, Rihand, Vindhyachal, Talcher Super, Faridabad, Jhanor Gandhar, Korba, Singrauli, and Simhadri.

Flyash Leachate study at Rihand was conducted to assess the impact of leachates from the ash ponds into the ground water. From the study it is concluded that no heavy metals leached out from ash pond to either soil or ground floor.

Water balance studies at Gandhar and Kawas gas stations were taken up to account for water intake, consumption and outflow and to assess benefits of recycling system provided. Draft reports for both the stations have been prepared. The studies have shown that as a result of employing higher Cycle of Concetration (COC) than the design for the condenser cooling circulating water system, the stations are saving/conserving water. In addition, increase in efficiency of machines and reduction in downtime for condenser cleaning has also been achieved.

A study on Solid Waste Management was completed at the Jhanor-Gandhar Gas Power Project covering identification of different types of wastes on the basis of their chemical & physical characterization, their categorization and disposal as per MOEF guidelines. The findings and recommendations of the report are under implementation at our other power plants also.

As a result of pursuing sound environment management systems and practices, all NTPC stations have implemented ISO-14001 Certified Environment Management System.

17.0 SAFETY : The protection of workers against injury and disease has always been a key issue for the NTPC and Occupational Safety at workplace is one of the concerns & utmost importance is given to provide the safe working environment and create Safety awareness among the employees. Safe methods are practiced in all areas of Operations & Maintenance (O&M) and Construction & Erection (C&E) activities. Safety clauses in general conditions of contracts for C&E and O&M activities are revised and being implemented.

Regular plant inspections, internal and external safety audits are carried out at each Project/Station. Safety training to employees and contract workers is our culture.

Workers Participation in Safety Management is promoted through Safety Committees, Safety Circles, Safety Taskforces and Safety Stewards Schemes. Disasters Management Plans are reviewed and regular mock drills are conducted at all the projects/ stations to familiarize the employees and to meet any emergency.

Workplace monitoring and medical examination of the employees are being carried out to create safe working conditions at work place.

Looking into the necessity and to ensure the best health and safety performance and the accident free environment, NTPC Corporate Management advised its projects to implement OHSAS/IS 18001 and also obtain the Certification. Till date total nineteen (19) Projects/ Stations have already obtained the certification of OHSAS-18001 (Occupational Health & Safety Assessment Systems).

NTPC Ramagundam has been conferred with the first “Safety Initiative Award 2005” for implementing innovative, Safety, and Quality Procedures and Practices. The award is instituted by the Safety and quality forum of Institution of Engineers (India).

18.0 ACCOLADES AND AWARDS : NTPC has been consistently getting various Shram Awards & Meritorious Productivity Awards from the Government of India and Safety Awards from British and U.S. Safety Council. NTPC has been recipient of numerous other awards also. Some of these awards received in 2005-06 are :

- International Project Management Award for Simhadri by International Project Management Association (IPMA).
- NTPC ranked 5th Best Company to Work for in India in the survey conducted by Mercer Consulting-Business Today.
- Ernst and Young Manager Entrepreneur of the year award to CMD, NTPC.
- Platts Global Energy Award for Community Development Programme.
- Golden Peacock Global Award for Excellence in Corporate Governance by World Council for Corporate Governance, London, UK.
- Performance Excellence Award by Indian Institution of Industrial Engineering.

> Greentech Safety Award by Greentech Foundation.
> Golden Peacock Eco Innovation Award & Environment Management Award by Institute of Directors.
> Golden Peacock National Training Award by Institute of Directors.

ANNEXURE-I

DETAILS OF NTPC PROJECTS ALREADY COMMISSIONED I. COAL BASED PROJECTS

S. No.	Project	State	Commissioned Capacity (MW)
1.	Singrauli	UP	2000
2.	Korba	Chhattisgarh	2100
3.	Ramagundam	AP	2600
4.	Farakka	WB	1600
5.	Vindhyachal	MP	2260
6.	Rihand	UP	2000
7.	Kahalgaon	Bihar	840
8.	NCTPP	UP	840
9.	Talcher STPP	Orissa	3000
10.	Talcher TPS	Orissa	460
11.	Unchahar	UP	840
12.	Simhadri	AP	1000
13.	Tanda TPS	UP	440
	Total (Coal)		**19980**

II. COMBINED CYCLE PROJECTS

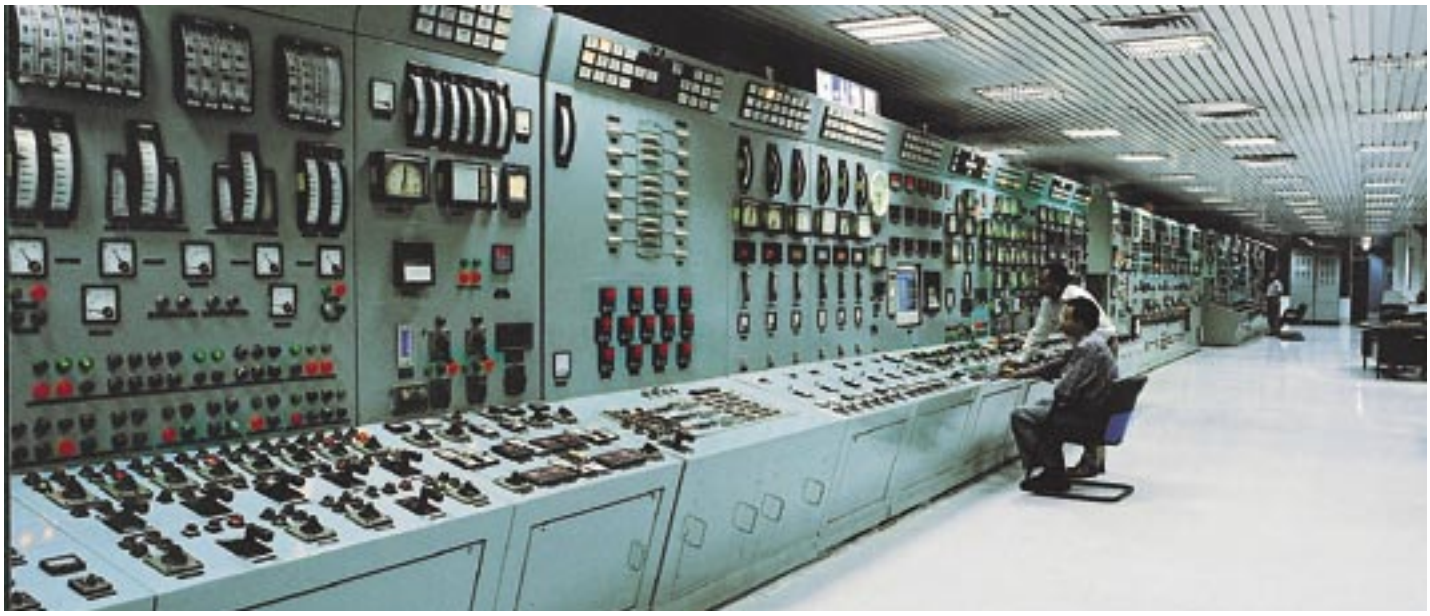
1.	Auraiya	UP	652
2.	Anta	Raj	413
3.	Kawas	Gujarat	645
4.	Dadri	UP	817
5.	Jhanor-Gandhar	Gujarat	648
6.	Kayamkulam	Kerala	350
7.	Faridabad	Haryana	430
	Total (Gas)		**3955**
	TOTAL (Coal + Gas)		**23935**
III.	**CAPTIVE POWER PLANTS**		**314**
	GRAND TOTAL		**24249**

Turnover Percentage

2004-05 : 0.58

GRIEVANCE REDRESSAL MECHANISM IN NTPC

NTPC has a public grievance redressal mechanism in place for dealing with grievances of public at large. The Company Secretariat Department is the nodal point for redressal of Public Grievances and the Company Secretary has been designated as Director (Grievances) for the Corporation. Grievance Officers have also been appointed in all Projects/ Regional Offices. Grievances received from the public are being processed as per guidelines issued by Department of Administrative Reforms and Public Grievances and a monthly report is furnished regularly to the Department. Grievances from employees are being dealt as per staff grievance procedure framed in this regard.



Control Room of NTPC Power Plant

Chapter - 23.2

NATIONAL HYDROELECTRIC POWER CORPORATION LTD. (NHPC)

NHPC is a Schedule "A" Enterprise of the Government of India with an Authorized Share Capital of Rs. 15,000 Crores and an Investment base more than Rs. 22,200 Crores.

It was set up in 1975, and now has become the largest organisation for Hydro Power development in India, with capabilities to undertake all the activities from conceptualization to commissioning of Hydro Projects. The main objects of NHPC includes, to plan, promote and organize an integrated and efficient development of hydroelectric, Wind, Tidal and Geothermal in accordance with National Economic policy. NHPC has signed a MOU with Rural Electrification Corporation Ltd. (REC) for formulation and implementation of projects under the programme of Accelerated electrification of one lakh villages and one crore households. NHPC has also entered into an agreement with the Ministry of Rural Development for development and maintenance of rural access roads in six districts of Bihar under Pradhan Mantri Gram Sadak Yojna, a 100% Centrally Sponsored Scheme. Works are in progress on these schemes.

The Corporation has following operating power stations and under-construction projects

A. Operating Power stations:

The Corporation has so far completed construction of 14 hydroelectric projects, as under:

Sl. No.	Name of the Project	State/UT/ Country	Installed Capacity (HAW)	Year of Completion
1.	BAIRASIUL	H.P.	180	1981
2.	LOKTAK	Manipur	105	1983
3.	SALAL STAGE-I	J&K	345	1987
4.	TANAKPUR	Uttaranchal	120	1992
5.	CHAMERA-I	H.P.	540	1994
6.	SALAL STAGE-II	J&K	345	1995
7.	URI	J&K	480	1997
8.	RANGIT	Sikkim	60	2000
9.	CHAMERA-II	H.P.	300	2004
10.	DHAULIGANGA	Uttaranchal	280	2005
11.	INDIRA SAGAR	M.P.	1000	2005
12.	DEVIGHAT	Nepal	14.10	1984
13.	KALPONG	A&N Islands	5.25	2001
14.	KURICHU	Bhutan	60	2002

While first ten of the above mentioned projects are in the ownership of the Corporation, Indira Sagar is a Joint Venture between NHPC and Govt. of M.P. with a total installed capacity of 1000 MW from 8 units. Devighat, Kalpong & Kurichu projects were executed by NHPC on deposit work/turnkey basis and have been handed over to the owners.

NHPC has generated 10655.96MUs up to 31.12.2005 and likely to generate 1582.16 MUs from remaining part of financial year 2005-06 (i.e. Jan. 06 to March 06) against the annual target of 11932 MUs. The Capacity Index upto Dec. '05 was 98.71% against the annual target of 94.1% (details in Annex-A).

UNDER CONSTRUCTION PROJECTS

The Corporation is presently engaged in the construction of the following hydro projects: -

Sl. No.	Name of the Project	State/UT/ Country	Installed) Capacity (MW
1.	DULHASTI	J&K	390
2.	SEWA - II	J&K	120
3.	URI-II	J&K	240
4.	PARBATI-II	H.P.	800
5.	PARBATI-III	H.P.	520
6.	CHAMERA-III	H.P.	231
7.	TEESTA LOW DAM-HI	West Bengal	132
8.	TEESTA LOW DAM-IV	West Bengal	160
9.	TEESTA-V	Sikkim	510
10.	SUBANSIRI LOWER	Ar. Pradesh	2000
		Total	**5103**
	Joint Venture Projects		
11.	OMKARESHWAR	M.P	520
		Grand Total	**5623**

The Status of On Going projects ending December 2005 is given below

1. Dul hasti HE Project (390 MW), J&K

Excavation of Head Race Tunnel has been completed on 27.08.03. 8859m (89.04%) HRT Lining has been done till Dec. 05. The balance lining work of HRT including grouting is expected to be completed by June '06. All other works except HRT has already been completed.

105 MW Loktak Power Station (Manipur) - Penstock

2. **Sewa HE Project Stage-II (120 MW), J&K**
   CCEA clearance was accorded by Govt. of India on 09.09.03 and the work is in progress. So far 4126 m (41.55%) HRT excavation has been completed. Dam Concreting is in progress. Surge Shaft pilot hole widening is in progress. Excavation of Power House has been completed. Other works are in progress. As per CCEA approval the project is to be commissioned by September, 2007.

3. **Uri HE Project, Stage-II (240 MW), J&K**
   CCEA clearance accorded by Govt. of India on 01.09.2005. Major Civil works awarded to M/s HCC Ltd. Mobilization at site by contractor in progress.

4. **Parbati HE Project, Stage-II (8OO MW), H.P**
   River diversion of the Project have been achieved in November,2003. About 16.70 Km long HRT out of 31.5 Km has been completed. Construction activities are going on in full swing and Dam excavation completed and 84. 18% of Power House excavation has been completed. As per CCEA approval the project is to be commissioned by September 2009.

5. **Parbati HE Project, Stage-III (520MW), H.P**
   CCEA clearance accorded by Govt. of India on 9.11.2005. All Major civil works awarded to M/s Patel-L&T consortium and M/s Jager-Gammon JV. Mobilisation at site by contractor in progress.

6. **Chamera HE Project, Stage-III (231MW), H.P**
   CCEA clearance accorded by Govt. of India on 01.09.2005. Major Civil works awarded to M/s HCC Ltd. Mobilisation at site by contractor in progress.

7. **Teesta Low Dam Project, Stage-III (132 MW), West Bengal.**
   Govt. sanction was accorded on 30/10/2003 with completion schedule of Project by March 2007. Excavation of Intake structure (48.73%), Penstocks (65.20%), Power House (75.71%) & Tail race Channel (35.33%) have been completed and the project is expected to be commissioned by March 2008.

8. **Teesta Low Dam Project, Stage-IV (16OMW), West Bengal**
   CCEA clearance accorded by Govt. of India on 30.09.2005. All major civil works have been awarded to M/s H.C.C. Ltd. on 19.1.2006.

9. Teesta HE Project Stage-V (510 MW), Sikkim

67.48% Dam concreting, 96% heading excavation, 72.6% benching and 42.74% overt lining of Head Race Tunnel (HRT) completed. Excavation and lining of Desilting Chambers, erection of steel liners in Pressure Shafts/Penstocks are in progress. Major Civil works of Power House, Cable Tunnel, bust ducts, ventilation tunnels and Tail race Tunnels have been completed. Erection of all three generating units is in progress. Project is expected to be completed as per schedule i.e. by Feb. 07.

10. Subansiri (Lower) HE Project (2000 MW) Ar. Pradesh.

Subansiri Lower was entrusted to NHPC on 1st May 2000 by Govt. and was accorded CCEA clearance on 9th Sept. 2003 with completion period of 7 years. Major civil works have been awarded. Final forest clearance was accorded by MOEF on 12.10.2004. Excavation of Diversion Tunnels, Adit to Pressure shaft, Surge Chamber and Power House are in progress. The project is expected to be commissioned by Sept. 2010.

11. Omkareshwar HE Project (52O MW), Madhya Pradesh

CCEA approval has been accorded on 29.05.2003 and work on turnkey basis was awarded to M/s Jai Prakash - Voith Simens Consortium, New Delhi on 09.06.2003. Excavation of Power House, Penstock, Power Dam and Intake has been completed. Dam excavation & concreting, excavation of Head Race Channel, Tail Race Channel & Switchyard is in progress. E&M and HM works are in progress. Project is expected to be completed as per schedule in Feb.2008.

II. New schemes – The Corporation have in hand following new schemes at various stage of survey & Investigation

A. PROJECTS UNDER STAGE-II (AWAITING CLEARANCES)

SL. NO.	Name of the Projects	State	Installed Capacity (MW)
1.	Chutak	J&K	44
2.	Nimoo Bazgo	J&K	45
3.	Kishenganga	J&K	330
4.	Pakal Dul	J&K	1000
5.	Siyom	Ar. Pradesh	1000
	TOTAL		**2419**

1. Chutak (44 MW), J&K

CEA has accorded Techno Economic Appraisal. 'In-principle' approval from Planning Commission has been accorded. No forest land is involved. PIB meeting held on 8.6.05 and draft CCEA note submitted to MOP on 18.7.05. PPA has already been signed between Power Development Deptt., J&K 85 NHPC Ministry of Defence has accorded defence clearance. Presently, infrastructure development works are in progress.

2. Nimoo Bazgo (45 MW), Laddakh (J&K),

CEA has accorded Techno Economic Appraisal. 'In-principle' approval from Planning Commission is accorded. No forest land is involved. Environment clearance issued by MOEF on 30.5.2005 subject to NOC from Archaeological Survey of India. Ministry of Defence has accorded defence clearance. PIB meeting held on 8.6.05 and draft CCEA note submitted to MOP on 30.6.05. PPA has already been signed between Power Development Deptt., J&K & NHPC. Presently, infrastructure development works are in progress.

3. Kishanganga (33O MW), J&K

CEA has accorded Techno Economic Appraisal. Environment clearance has been accorded by MOEF. The forest proposal for diversion of forest land is under formulation by J&K Forest Department. Departmental execution of Diversion Tunnel has already been initiated. Revised Project Proposal for investment decision is under consideration of Govt. of India.

4. Pakal Dul (1000 MW), J&K

DPR was submitted to CEA for accord of TEA. Forest clearance falling out side the KHANP has been accorded by Govt. of J&K. Presently; infrastructure development works are in progress.

5. Siyom (1000 MW), Arunachal Pradesh

Detailed Project Report has been submitted to CEA on 16.09.03 for Techno Economic Clearance. Being a multipurpose scheme involving flood moderation it requires clearance by Technical Advisory Committee of MOWR which is awaited thereafter TEC will be accorded by CEA. Environment clearance accorded by MOEF. Presently, infrastructure development works are in progress.

B. PROJECTS UNDER PREPARATION OF DETAILED PROJECT REPORT

SL. NO.	Name of the Projects	State	Installed Capacity (MW)
1.	Bursar	J&K	1020
2.	Dibang	Arunachal Pradesh	3000
3.	Siang Lower	Arunachal Pradesh	1600
4.	Subansiri Middle	Arunachal Pradesh	1600
5.	Subansiri Upper	Arunachal Pradesh	2000
6.	Lakhwar Vyasi	Uttranchal	420
7.	Kotlibhel SMA	Uttaranchal	195
8.	KotlibhelSt-IB	Uttaranchal	320
9.	Kotlibhel St-II	Uttaranchal	530
10.	Bav-II	Maharastra	20
	TOTAL		**10705**

Survey & Investigation in respect of above schemes is being carried out for collecting necessary data for preparing DPR.

C. PROJECTS UNDER PREPARATION OF FEASIBILITY REPORT

SL. NO.	Name of the Projects	State	Installed Capacity (MW)
1.	Siang Upper/ Intermediate	Arunachal Pradesh	11000
	Total		**11000**

Recently NHPC has signed agreement with the Govt. of Uttaranchal for execution of 240 MW Chungar Chal, 630 MW Garva Tawaghat and 55 MW Karmoli Lumti Tulli Hydroelectric Projects in Pithoragarh district for development on Build, Own, Operate and Maintain (BOOM) basis.

Apart from above, the Corporation has under taken following Small Hydroelectric Projects for execution.

1. Kambang Small HE Project (6 MW), Ar. Pradesh

The Project is under execution by NHPC on deposit basis from Arunachal State Government and construction works are almost complete and commissioning of the project is expected shortly.

2. Sippi Small HE Project (4 MW), Ar. Pradesh

The Project is under execution by NHPC on deposit basis from Arunachal State Government and construction works are going on in full swing. Commissioning of the project is expected shortly.

III. FINANCIAL PERFORMANCE OF THE CORPORATION

The corporation has registered a Net profit (after Tax) of Rs. 508.82 Crores for the period ending 31.12.2005 compared to the profit of Rs. 430.58 Crores for the corresponding previous year's period ending 31.12.2004.

IV. COMMERCIAL PERFORMANCE OF THE CORPORATION

During the financial year 2005-06 (upto Dec.05), a cent per cent realization has been achieved (Rs. 1674.50 crores realized against current years billing of Rs. 1625.91crores outstanding bills). With all out efforts for realization of energy bills/dues, the current dues now reduced to Rs. 25.21 Cr. only as on 31.12.2005 (which is about 0.17 months of average billing) by increased realization. Also, there is no default in getting payment of interest on bonds and long term advances and an amount of interest of Rs. 239.87crores has been earned upto Dec. '05.

690 MW Salal Power Station (J&K) - Concrete dam

V. PERFORMANCE AGAINST MEMORANDUM OF UNDERSTANDING (MOU)

Memorandum of Understanding was signed for the year 2005-06 between NHPC and Ministry of Power in March 2005 setting targets for different performance parameters as per MOU guidelines issued by Department of Public Enterprises and as approved by ATF/DPE during discussions.

The targets can be broadly classified into Static financial parameters covering financial performance indicators, financial indicators and financial returns-labour productivity and total factor productivity, Dynamic parameters like Quality, HRD (% of work force trained), VRS, R&D, R&M, IT 85 Communication, project implementation parameters, survey and investigations and consultancy assignments. Some specific parameters covering parameters like generation, capacity Index and Recovery of Current dues are major parts of performance indicators on a five point scale.

NHPC has been rated as "Excellent" for the Tenth consecutive year up to the year 2003-04.

VI. CO-OPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

- **TAMANTHI HE PROJECT (12OO MW)**

In pursuance to an Agreement signed on 13.4.2004 between Ministry of External Affairs (MEA) and NHPC Ltd, NHPC has prepared and submitted Pre- feasibility report (PFR) for Tamanthi HE Project to Government of Union of Myanmar (GoUM) in April 2005, which was accepted by GoUM in June 2005. In a meeting with Foreign Secretary, Govt. of India and Dy. Minister of Foreign Affairs of Myanmar held on 19th October 2005, GoUM has expressed their keenness for the development of Tamanthi HE Project as a joint project. Discussions are in progress with MEA for taking up the work of preparation of Detailed Project Report (DPR) by NHPC. NHPC has submitted cost details and time frame for preparation of DPR to MEA/MOP.

- **MANGDECHHU HE PROJECT (672 MW), BHUTAN**

NHPC is likely to undertake the work of DPR preparation of Mangdechhu HE Project as per bilateral talks held in December 2004 between Govt. of India and Royal Govt. of Bhutan. This project is to be undertaken under Govt. of India project-tied assistance to Bhutan. Terms of reference, Draft Implementation Agreement and Financial Estimate for Preparation of DPR for Mangdechhu HE Project have been furnished to MEA in November 2005 by NHPC.

330 Kishanganga HE Project, (J&K) - Diversion Tunnel

- **COOPERATION WITH UZBEKISTAN AND TAJIKISTAN**

A high level delegation from NHPC visited Uzbekistan in April 2003 and Tajikistan in October 2003 to explore the possibility of setting up small hydropower projects in those countries.

The delegation visited Shahrihan HPS No. 0 of proposed 24.8 MW capacity in Uzbekistan and found it a technical feasible and implementable project.. The committee has recommended the proposal to MEA and MOP, Govt. of India for implementation for development under co-operation between India and Uzbekistan.

In Tajikistan, the delegation visited Varzob-I Hydropower Plant, which required renovation & modenisation. It also visited project site of proposed Marzich Project (2.627 MW) and a few potential sites on Iskandendarya River. The delegation has submitted its report to Ministry of External Affairs and Ministry of Power, Government of India, and recommending projects in several fields for co-operation between India and Tajikistan .

Presently as advised by MEA(GOI), renovation and modernisation of Varzob-I & II projects is proposed to be taken up. Detailed proposal prepared jointly with BHEL has been submitted in Oct. 2005 to MEA and confirmation for undertaking the work is awaited.

VII. POWER DEVELOPMENT ACTIVITIES IN NORTH EASTERN REGION

The following are the ongoing, sanctioned and Survey & Investigation Hydro electric projects in N.E. region and Sikkim.

a. OPERATING POWER STATIONS

i)	Loktak (Manipur)	-	105 MW
ii)	Rangit (Sikkim)	-	60 MW

b. ONGOING PROJECTS

i)	Teesta St-V (Sikkim)	-	510 MW
ii)	Subansiri Lower (Arunachal.)	-	2000 MW
iii)	Kambang (Arunachal)	-	6 MW
iv)	Sippi (Arunachal)	-	4 MW

c. SURVEY & INVESTIGATION PROJECTS

i)	Siyom (Arunachal)	-	1000 MW
ii)	Siang (Lower) (Arunachal)	-	1600 MW
iii)	Siang (Upper) (Arunachal)	-	11000 MW
iv)	Subansiri Middle (Arunachal)	-	1600 MW
v)	Subansiri Upper (Arunachal)	-	2000 MW
vi)	Dibang (Arunachal)	-	3000 MW

VIII. GRIEVANCE CELL:

NHPC has its own internal Grievance Redressal Machinery for expeditious redressal of grievances of the general public as well as its own employees.

The functioning of the machinery is monitored periodically to ensure efficacy of the system.

The Grievance Redressal Machinery is given extensive publicity among the employees and members of the public and all possible efforts are made to ensure expeditious redressal of the grievances as and when received. A monthly and quarterly report / return on redressal of public grievances are being sent regularly to the Ministry of Power.

Brought forward as on 01.01.2005	Number of Grievances received during the year upto 31.12.2005	Total number of grievances upto 31.12.2005	Number of grievances disposed off.	Number of grievances pending
NIL	NIL	NIL	NIL	NIL

IX. R&D Activities

1. National R&D Project

(i) Development of Silt Resistant Material for Turbines of Hydro Generators

NHPC is participating in conjunction with IITs & CPRI Bangalore, in National R&D Project for development of Silt Resistant Material for elongation of service life of underwater components for which NML (National Metallurgical Laboratory) Jamshedpur is the lead agency. The Proposal has been approved by the Standing Committee of Govt. of India on R&D in its 9th Meeting held on 28th June 2005 at CEA New Delhi. NHPC's share is Rs. 1.00 crore.

Uri-II Power Station (J&K) Tunnel under Const.

(ii) Thermal Spray coating for improvement of in-service life for Hydro Power Generating Components

NHPC is the lead agency for National R&D Project for development of hard coatings for elongation of service life of underwater components. The Proposal has been approved by the Standing Committee of Govt. of India on R&D in its 9th Meeting held on 28th June 2005 at CEA New Delhi. NHPC's share is Rs. 1.00 crore.

2. Development of Geothermal Power

NHPC being the Nodal Agency for Exploration of Geothermal Energy has already carried out the ranking studies with cooperation of International Consultant/ Contractor viz. M/s Geotherm Ex, USA. Six most promising geothermal fields were identified in order of following ranking :-

- Tattapani in Chattisgarh,
- Puga in J&K,
- Cambeygraben in Gujarat,
- Manikaran in HP,
- Surajkund in Jharkhand
- Chhumathang in J&K.

Work is being pursued on these projects. Recently a team comprising representative of various power utilities including NHPC and Prof. D. Chandra Shakhram, IIT, Mumbai & Chairman of M/s Geo Syndicate Power Pvt.

Ltd. were deputed to New Zeeland by MOP to study the Geothermal projects in operation. The detailed report of the team is awaited.

3. Solar Power

A pilot project for adoption of Solar Energy at NImmo Bazgo Hydroelectric project (Leh) of NHPC Investigation Schemes is being undertaken to promote green power.

4. Energy Audit of Power Stations

NHPC has taken the energy audit of Baira Siul & Salal Power Station with CPRI (Central Power Research Institute), Bangalore to assess its performance parameters of both power stations and to workout the plan for its improvement whenever required. The energy audit of Baira Siul Power station has been completed & the report is under evaluation.

The energy audit of Salal Power Station has been completed and the draft report is under preparation by CPRI.

5. Energy Conservation

The latest petroleum fuel saving technology (Fitch Fuel Catalyst) is being evaluated to establish its efficacy.

X. CONSULTANCY SERVICES OF THE CORPORATION

NHPC is providing consultancy services in the various fields of hydro power viz. river basin studies, survey works, design and engineering, geological studies, geotechnical. studies, hydraulic transients studies, hydrological studies, contract management, construction management, equipment planning, under ground construction, testing commissioning, operation & maintenance etc. to the leading organisations of the country like CEA, CWC, MEA, Northern Railway, NTPC, PGCIL, REC, SJVNL, THDC, NHDC, BBMB, DVC, A&N administration, BSEB, CSEB, ED Govt. of Arunachal Pradesh, KSEB, PED Govt. of Mizoram, PD Govt. of Nagaland, PIDB Govt. of Punjab, RDD Govt. of Bihar, UJVNL, WRD Govt. of Goa, WRD Govt. of Bihar, BSHPC, JKPDC, LAHDC, WBPDCL,KPA Bhutan, THPA Bhutan, Govt. of Nepal and other private organizations.

NHPC is also registered with WORLD BANK, ASIAN DEVELOPMENT BANK, AFRICAN DEVELOPMENT BANK AND KUWAIT FUND FOR ARAB ECONOMIC DEVELOPMENT AS A CONSULTANT. NHPC is also registered with Central Water Commission, India and Consultancy Development Centre as a Corporate Member.

NHPC has been appointed "Lender's Independent Engineers" for Baspa - II H.E. Project (300 MW) in the state of Himachal Pradesh, which is being financed by ICICI Ltd.

NHPC has signed MOU with Montgomery Watson Harza Americas Inc., International Energy & Water Resources Group, Lahmeyer International GmbH, Germany, JSC "Centre of Engineering UESR" Institute Hydro Project, Russia for providing consultancy & management services jointly in the field of Hydro Power in India and abroad. NHPC has also signed MOU with domestic financial institutions viz. IFCI and ICICI Bank for providing Techno-Commercial Advisory Services as well as "Lender's Independent Engineers" for hydro projects financed by these institutions. NHPC has also signed MOU with REC to provide consultancy services as "Lender's Independent Engineers" for hydro projects funded by REC.

In addition an MOU has been signed with REC to undertake Rural Electrification Works in various states. Agreement has been signed with Govt. of Bihar, West Bengal, Chhattisgarh, Orissa and Jammu & Kashmir for Rural Electrification Works.

240 MW Uri-II HE Project (J&K) - Drilling Work at Power House Site.

Anuex.-A

GENERATION FROM NHPC POWER STATIONS

(FIGURES IN MUs)

NAME OF POWER STATION	GENERATION UP TO DECEMBER '05	LIKELY TO BE GENERATED IN BALANCE PERIOD i.e JAN'06 TO MARCH'06	TOTAL EXPECTED GENERATION DURING 2005-06
BAIRASIUL	667.78	110.17	777.95
LOKTAK	449.88	115.84	565.72
SALAL	3050.97	301.19	3352.16
TANAKPUR	443.13	43.27	486.50
CHAMERA-I	2118.06	171.44	2289.50
URI	2038.96	507.47	2548.43
RANGIT	311.89	38.89	350.78
CHAMERA-II	1351.42	207.08	1558.50
DHAULIGANGA	223.86	87.72	311.58
TOTAL	**10655.96**	**1582.16**	**12239.12**

Note: GENERATION TARGET FOR THE MONTH OF JAN'06 TO MARCH'06 AS PER VERY GOOD RATING OF MOU 2005-06 OF THE INDIVIDUAL POWER STATIONS. TARGET FOR GENERATION FROM DULHASTI PROJECT HAS NOT BEEN INCLUDED.

60 MW Rangit Power Station, (Sikkim) - Power House

CAPACITY INDEX OF NHPC POWER STATIONS

(FIGURES IN %)

NAME OF POWER STATION	CAPACITY INDEX UP TO DECEMBER' 05	TOTAL EXPECTED CAPACITY INDEX DURING 2005-06
BAIRASIUL	93.64	94.54
LOKTAK	93.41	91.44
SALAL ,	100.00	99.43
TANAKPUR	99.64	94.68
CHAMERA-I	100.00	98.01
URI	100.00	99.38
RANGIT	96.43	93.44
CHAMERA-II	97.26	95.77
DHAULIGANGA	97.79	94.07
TOTAL	**98.71**	**97.46**

Note:

1. CAPACITY INDEX FOR THE MONTH OF NOV'05 FOR LOKTAK POWER STATION IS SUBJECT TO CERTIFICATION BY NEREB.
2. CAPACITY INDEX FOR THE MONTH OF NOV'05 FOR NORTHERN REGION POWER STATIONS ARE PROVISIONAL.
3. CAPACITY INDEX TARGET FOR THE MONTH OF DEC' 05 TO MARCH' 06 A0S PER VERY GOOD RATING OF MOU 2005-06 OF THE INDIVIDUAL POWER STATIONS.

800 MW Parbati-II HE Project, (HP) - Desilting Chamber.

Chapter - 23.3

POWER GRID CORPORATION OF INDIA LTD

Power Grid Corporation of India limited (POWERGRID) was incorporated on October 23, 1989 with an authorized share capital of Rs. 5,000 Crore as a public limited company, wholly owned by the Government of India.

POWERGRID started functioning on management basis with effect from August, 1991 and it took over transmission assets from NTPC, NHPC, NEEPCO and other Central/ Joint Sector Organizations during 1992-93 in a phased manner. In addition to this, it also took over the operation of existing Regional Load D espatch Centers from CEA, in a phased manner, which have been upgraded with State of-the-art Unified Load Despatch and Communication (ULDC) schemes. According to its mandate, the Corporation, apart from providing transmission system for evacuation of central sector power, is also responsible for Establishment and Operation of Regional and National Power Grids to facilitate transfer of power within and across the Regions with Reliability, Security and Economy on sound commercial principles.

Based on its performance POWERGRID was recognised as a Mini-ratna company by the Government of India in October 1998. POWERGRID as the Central Transmission Utility of the country, is playing a major role in Indian Power Sector and is providing Open Access on its inter-State transmission system.

ACHIEVEMENTS OF POWERGRID

As on December 2005, POWERGRID is operating around 54,800 ckt. kms. of transmission lines along with 93 Sub-stations with transformation capacity of 54,350 MVA. With the use of modern state-of-the-art preventive maintenance techniques, average availability of transmission systems during the year 2004-05 was maintained above 99%. Based on its network size and operational efficiency, POWERGRID ranks among one of largest and best-managed transmission utilities in the World. POWERGRID continues to wheel about 45% of total power generated in the country through its gigantic transmission network.

Shri Sushilkumar Shinde Hon'ble Minister of Power with (L to R) Sh. Dilip Walse Patil Energy Minister Maharashtra Sh. R.V. Shahi Secretary (Power) and Sh. R.P. Singh C & MD of PGCIL at inauguration of Western Region Unified Load despatch and Communication System.

Power Transmission Towers

Based on the all round performance during FY 2004-05, POWERGRID is once again poised to achieve the highest rating i.e. "Excellent" under the MoU signed with Ministry of Power.

In the year 2004-05, company registered a Turnover of Rs. 2,831 Crore and earned a Net profit (After tax) of Rs. 786 Crore thereby recording a Net profit margin of 27.76%. The company's Gross asset base at the end of the financial year 2004-05 stood at Rs. 21,930 Crore as against Rs 20,000 Crore at the end of last financial year. The Return on Net Worth for the company was at 9.12% in 2004-05, creating significant value for the shareholders.

The company undertook a capital investment of Rs. 3,221 Crore during the financial year 2004-05 and the required funds were tied up from internal resources, bonds/term loan from the domestic sources, grant from Government of India and ECB/Supplier's Credit. POWERGRID continued to implement its projects with economy and within stipulated time frame to derive maximum economic benefits. Its advanced and cost effective Integrated Project Management and Control System (IPMCS) for total project review and perpetual monitoring, has contributed significantly. In the year 2005 upto November 2005, POWERGRID has commissioned about 5,060 CKm. of transmission lines, 9 new sub-stations and has added transformation capacity of about 4,860 MVA. Major projects commissioned include: Gazuwaka HVDC augmentation, Transmission system associated with Ramagundam generation project (500 MW), Transmission system associated with Tarapur 3&4 generation project, Transmission system associated with Rihand-II generation project, Transmission system associated with Dhauliganga HEP, Madurai-Trivandrum 400 kV D/C line, Kaiga-Narendra transmission system

This has helped in improving power supply situation in various regions, enhanced inter-regional power transfer capacity and has resulted in improved reliability etc.

In addition to above, 15 new projects worth about Rs. 9,100 Crore have been taken up for implementation in 2005-06, Major projects include Transmission system associated with Kudankulam APP, Transmission system associated with Koteswar, Transmission system associated with RAPP-5&6, Sipat-II Supplementary, Transmission System associated with Koldam HEP, Transmission system associated with Sewa-II, System Strengthening-VI in Southern Region, System Strengthening-VII in Southern Region, National

Load Despatch Center (As on December, 05).

BUSINESS DEVELOPMENT

POWERGRID, an ISO 9001 certified company, has acquired in-house expertise at par with global standards in the field of Planning, Engineering, Load Despatch and Communication, Telecommunication, Contracting, Financial and Project Management. POWERGRID is executing various consultancy assignments in these areas as a part of its Business Development Activity. Till November 2005-06, POWERGRID has secured 19 nos. of new consultancy assignments with a consultancy fee of more than Rs. 110 Crore, corresponding to project cost of more than Rs. 716 Crore. During the year 2005-06, POWERGRID has realised consultancy fee of Rs. 41.05 Crore (upto November) from its ongoing consultancy project.

POWERGRID's first International Consultancy Contract with Bhutan Telecom for establishment of OPGW system on turnkey basis in the Royal Kingdom of Bhutan was successfully completed on schedule. POWERGRID has secured the prestigious international Consultancy assignment against stiff competition from M/s Bhutan Power Corporation Limited for providing consultancy for 220/66 KV Substation at Pasakha Industrial Estate, Bhutan. Govt. of India has identified POWERGRID to implement on a turnkey basis a 220 kV Double Circuit transmission line from Pul-e-Khurmi to Kabul and a new 220/110/20 kV sub-station at Kabul, a major infrastructure project in Afghanistan. This project cost is estimated to be about Rs. 416 Crore. This challenging assignment has to be carried out facing hostile terrain at altitudes ranging from 1,800 m to 4,000 m above MSL and at temperatures as low as –30º C and is to be completed within 42 months.

POWERGRID has secured an overseas consultancy assignment from Nepal Electricity Authority (NEA) for the construction of first 220 kV D/C Transmission Line in Nepal from Khimti to Dhalkebar (75 km) against a stiff competition with the inter-national reputed consultants from Germany, Japan, Australia & U.K. The estimated Project cost is US $ 22 Million and is being funded by World Bank. The total consultancy fee is about Rs. 100 lacs and is being funded by NEA.

Bhutan Power Corporation on behalf of Royal Govt. of Bhutan has appointed POWERGRID as a consultant to execute the work of construction of 132 kV single circuit transmission line (60 km) from Deothang in Bhutan to

Shift engineers with the ULDC facilities on high vigil on grid operation

Rangia in Assam alongwith associated bays, to provide adequate transmission arrangement for reliable operation of Kurichhu HEP (Bhutan). The estimated cost of project (including POWERGRID consultancy fee) is Rs. 2285 lacs. Bhutan Electricity Authority has awarded consultancy work for development of Grid & Distribution code in Bhutan to POWERGRID with consultancy charges of US $ 30,000.

Ministry of Energy & Water (MEW), Islamic Republic of Afghanistan has awarded Engg. Consultancy Services for procurement of OPGW for Pul-i-Khumri-Chimtala line to POWERGRID with consultancy fee of Rupees 179.85 lacs

UNIFIED LOAD DESPATCH & COMMUNICATION FACILITIES

The unified approach for planning, engineering, procuring, and implementing the Load Despatch and dedicated Communication system is paying rich dividend in the form of timely completion of projects and enhancing in-house capability of handling these complex and gigantic schemes.

Planned rapid expansion of regional grids and their integration to form National Grid poses great challenges in Grid Operation & Management. Modernization of Regional Load Despatch Centres along with State/ Sub-State Load Despatch Centres and dedicated communication schemes in all the regions Northern, Southern, North-Eastern, Eastern and Western Regions have been successfully completed. These centres have become an epitome of technological excellence in grid operation through three tier hierarchical system, a unique feature in grid operation in the world. These are world's one of the largest and most complex projects. These complex projects involving the modern state-of-the-art technology have resulted in real time monitoring and control of the grid to enhance safety, security, reliability and stability in all the regions of the country. These facilities minimize grid disturbance/failure and facilitate quick grid restoration, in case of failure.

RESEARCH & DEVELOPMENT

Towards technological advancement, POWERGRID established fully automated remote controlled 400 kV substation at Bhiwadi in Rajasthan; the first in Indian Power Sector. Many more sub-stations are being planned on similar lines with a view to optimise upon establishment costs. POWERGRID is also introducing 'INVAR' power conductors, which can sustain high temperature upto 230ºC against the normal 85ºC. This would wheel more than two times electric power than the normal line. POWERGRID is also using Thyristor Controlled Series Compensation (TCSC) and uprating/ upgradation of lines, etc. to enhance power carrying capacity of existing lines. Further, in order to conserve the precious Right of Way, width of 765 kV transmission towers has been reduced from usual 85 mtrs. to 64 meters for the first time in the world. Further, the tower height has been raised to 80 mtrs., which makes it taller than the Qutab Minar, to save our precious forests.

POWERGRID envisages to establish a "Centre for Power Transmission Research and Application" which shall supplement the facilities of existing Research Institutions and provide opportunities for applied research in power transmission sector. POWERGRID has also constituted an advisory body consisting of eminent experts from power utilities, research and academic institutions and consultants from India as well as from Canada, USA, and Brazil to facilitate adoption of latest technologies for construction, monitoring and maintenance of transmission system suiting Indian conditions.

E-GOVERNANCE

POWERGRID is systematically developing competency to deploy Information Technology for efficient and effective discharge of its functions. Some of the salient achievements are Web based Enterprise wide Information Portal as a step towards E-Governance, State-of-the-Art Multi Locational Video Conferencing System, Inspection Management System on internet based B2B platform, Engineering Project management system developed in-house, Enterprise wide Converged IT and Communication System, Establishment of state-of-the-art 1200 node IT network infrastructure at its Gurgaon office complex with innovative features like Wi-Fi. POWERGRID has also initiated action for implementation of ERP.

Achievements of POWERGRID, in this area, have been recognized externally through:

a) "IT usage award 2003" conferred by Computer Society of India.

b) Microsoft Windows Server 2003 challenge award (International competition participated by 75 countries)

c) IT consultancy for Implementation of IT Policy at Delhi Transco

d) POWERGRID implemented Video conferencing facility in the capacity of technical expert cum co-ordinator for MOP.and CPSUs under MOP.

CONTRIBUTING TO DISTRIBUTION REFORMS UNDER APDRP

Under Accelerated Power Development & Reform Programme (APDRP) of Ministry of Power, POWERGRID has been assigned the role of Advisor-cum-Consultant (AcC) to lend its managerial and technical expertise for developing 182 distribution circles /towns/schemes spread over 18 states and involving projects worth about Rs. 8000 Crore.

In addition to the role of AcC, POWERGRID is executing APDRP schemes of about Rs. 1000 Crore on deposit work basis under bilateral arrangement in the states of Bihar, Goa, Meghalaya, Uttar Pradesh and Mizoram on turnkey basis.

Further to APDRP works, POWERGRID is executing Rural Electrification works of 2400 villages in Bihar on behalf of BSEB, on turnkey basis. POWERGRID entered into MoU with Rural Electrification Corporation for undertaking rural electrification works under Rajeev Gandhi Grameen Vidhyutikaran Yojana (RGGVY). Under this, POWERGRID has been assigned the job for execution of rural electrification schemes for electrifying 40,000 villages in Bihar, Orissa, West Bengal, U.P, Rajasthan, Gujarat, Assam, Tripura at an estimated cost of Rs. 3500 Crore.

These are very challenging assignments for POWERGRID, it being a transmission company. However, POWERGRID has taken up the challenge in right earnest and innovative measures for the same have been adopted. Its construction being a short term activity, to avoid permanent liability of additional manpower, POWERGRID has decided to deploy existing manpower & recruited retired experienced personnel from SEBs.

ENCOURAGING GRID DISCIPLINE

POWERGRID, in its efforts to ensure delivery of quality power and to maintain grid discipline, implemented "Availability Based Tariff (ABT)" in all the five regions. This has stabilized the frequency to the prescribed band as per IEGC i.e. 49.0 Hz to 50.5 Hz for large percentage of time in all the five regions.

ABT has also encouraged inter-State and inter regional bilateral trading resulting in meeting higher demand from the existing sources. Merit order operation of generating units is gaining importance and many States are utilizing this facility to utilize the system commercially. There is overall improvement in Grid stability and partial blackouts have been drastically reduced, while it has been possible to save the grid from total blackouts.

Western, Eastern & North-Eastern Regions continue to operate successfully in synchronous mode. In fact, Raipur – Rourkela 400 kV D/c line rescued Western Regional Grid in Sept'03 by importing power from Eastern Region when there was a generation loss in Western Region.

Efforts made by POWERGRID in modernizing the Regional Load Despatch Centers (RLDCs), implementation of Availability Based Tariff (ABT), power transfer through inter-regional links and effective Operation & Maintenance measures using State-of-the-Art technologies have led to overall improvement in power supply position in all parts of the country. It is demonstrated by the fact that there has been no major grid disturbance in any part of the country in the last 3 years. The trippings per line were lowest ever & the system availability in FY 2004-05 was as high as 99.75%.

With the development of vital inter-regional transmission links, surplus power of Eastern Region is being gainfully utilized by the power deficit regions. POWERGRID was able to facilitate transfer of 31,000 MU of energy across the regions during the year 2004-05, an increase of about 40% compared to previous year (i.e. 22,000 MU during 2003-04), which is likely to be exceeded in current financial year. Thus, inter-regional power transfer of worth Rs. 6,200 Crore was facilitated, most of which would have remained bottled up but for the facilities created by POWERGRID.

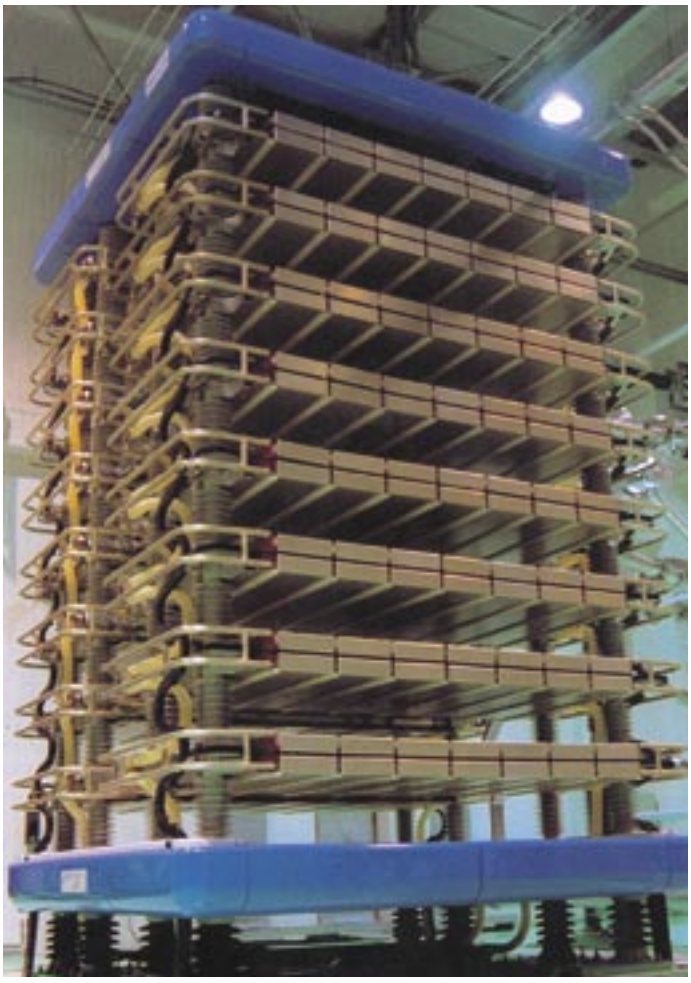
LEVERAGING HUMAN CAPITAL TO ACHIEVE EXCELLENCE

POWERGRID believes that its human resource consisting of about 7000 employees is the most important asset and accordingly, its policies are focused on development of human potential through skill upgradation, career enhancement and job rotation to achieve organizational objectives. An effective work culture has been established in the organization through empowerment, transparency,

decentralization and innovative practice of participative management through 'Open House' interaction. POWERGRID's growing productivity through an average annual growth of about 40% in the asset base of the company is witnessed with a manpower growth of only about 1.7% per annum.

Human Resource Development (HRD) is considered as a strategic function in POWERGRID. During the year, the company has designed and executed business aligned management development, technical training and competency enhancement programmes on its own and also in collaboration with reputed management development institutes such as IIMs, XLRI, ASCI, MDI and technical training institutes that include IITs, NPTI, and Hotline Training Centre.

To motivate the employees further, a committee of eminent experts is envisaged to be set up to examine the grievances of the employees and to suggest remedial measures. Besides, common dining facilities in its new and modern office building at Gurgaon have been set up, which has had a positive impact on the work ethos and team spirit of the employees.



HVDC Thyristor Bank

CITIZEN'S CHARTER

POWERGRID formulated its Citizen's Charter providing a visible front of its objectives, mission, commitments, terms of service and its obligation to the stakeholders. This is also intended to provide all information on schemes, plans and practices to users outside the organisation as well as information about accessing the services.

MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ISSUES

Creating Sustainable Corporate Values

POWERGRID, being in the infrastructure sector, is in enviable position to directly contribute to the society. Power, today drives all the economic activities in the society. POWERGRID, as the provider of inter-state transmission facilities and as operator of the countrywide electrical grids, has a pivotal role in country's power sector.

The sustainability of corporate values is proven by the fact that they are in consonance with the values cherished by the society. The objectives of the company are in alignment with the requirements of its stakeholders. End results of such value system are witnessed in all-round performance of the company, which has surpassed the targets. The company continues to make conscious efforts not only for sustaining such value-system but also inculcating desirable values.

ENVIRONMENT AND SOCIAL MANAGEMENT

POWERGRID is one of the largest electrical power transmission utilities in the world. It constructs, owns and operates Extra High Voltage (EHV) transmission network in India and carries out real time supervision and monitoring of power flow round the clock over the EHV network of the country in order to fulfill its goal of establishing a National Grid coupled with sustainable Development.

POWERGRID has achieved the distinction of being the first Indian Power company certified with Integrated Management System (IMS) comprising of ISO: 9001 for Quality Management, ISO: 14001 for Environment

Management and 18001 for Occupational Health & Safety. Independent and internationally accredited external agency audits these systems regularly.

POWERGRID's developmental activities have negligible environmental and social impact owing to very nature of its activities and proactive approach. In the year 2004, POWERGRID has upgraded its Environmental and Social Policy and Procedures (ESPP) evolved initially in the year 1998, through an open and transparent process of National Level Workshop in association with multilateral funding agencies, concerned Ministries of Govt. of India, NGOs and public consultation with wider section of people in the Regions to ensure that its activities has least impacts on environment and socio-economic fabric of the communities.

The ESPP describes POWERGRID's approach and commitment to deal with environmental and social issues relating to its transmission projects, lays its management procedures and protocol to mitigate the same. The ESPP includes framework for identification, assessment, and management of environmental and social concerns at both organizational and project levels.

The ESPP outlines POWERGRID's commitment to the goal of sustainable development through conservation of natural resources, continually improving its management system, accessing specialist knowledge of management of significant environmental and social issues and introducing State-of-the-Art and internationally proven technologies while strictly following the basic principles of Avoidance, Minimization and Mitigation. POWERGRID is meticulously following ESPP in every step of project implementation to tackle environmental and social issues effectively. Rehabilitation Action Plans (RAP) & Environmental Assessment Management Plan (EAMP) are prepared, implemented within first 12 months of construction period for all projects. Besides, implementation is monitored by the highest level of the hierarchy and feedback is obtained for continuous improvement.

POWERGRID maintains highest standards of corporate responsibility not only towards its employees but also to the consumers, society and the entire environment in which it operates, also shouldering community responsibility through various community development activities in areas around its establishments. It promotes socio-economic development and enriches the quality of life of the community through initiatives taken towards community empowerment by way of providing basic infrastructure facilities, relief and restoration work during natural calamities, in-house social clubs, social and cultural activities in the vicinity of its establishments by providing education to poor children, organizing health awareness/ check-up camp, sponsoring local religious/sports activity etc. most importantly through people's participation.

Initiatives like adoption of innovative tower structure designs and multi-circuit towers for reduction in Right of Way, installation of tall towers (75 mt.) to minimise impact on flora & fauna in ecologically sensitive areas, land management, massive plantation, provision for rain water collection and harvesting, Institutional development of its staff, Contractors and others associated with its operations and activities to maintain high level of care consistent with national regulations and international norms, etc. are continuous endeavors of POWERGRID.

Emergency Restoration

POWERGRID, consciously endeavours to discharge its broader social responsibilities. It has taken many steps which include faster restoration of transmission system belonging to State Power Utilities, which are damaged during Natural calamities like flood, earthquake, cyclones, etc. POWERGRID demonstrated its competence in restoring power in emergency through deployment of Emergency Restoration System (ERS) during the Gujarat cyclone in 1998, Orissa super cyclone in 1999, Gujarat earthquake in 2001 and Tsunami in 2004, snow avalanche in J & K in 2005. The efforts were applauded by one and all and the Hon'ble Prime Minister appreciated the efforts of POWERGRID while dedicating the reconstructed sub-stations to the people of Gujarat.

Transparency in operation

In POWERGRID, System & Procedure Manuals have been developed for most of the functional areas like Construction, O&M, Human Resource, Quality, etc. and well defined "Works & Procurement Policy and Procedure" (WPP).

POWERGRID is the first utility in Indian power sector to develop Environmental and Social Policy & Procedures

(ESPP) with public consultation. Committees of eminent independent experts have been constituted to advice POWERGRID on various strategic issues related to Environmental and Social Safeguards, financial management, procurement and project execution.

POWERGRID follows fair, equitable and transparent policies for all stake holders. Towards maintaining transparency in the procurement process, the invitations for bids (IFB) are widely published in National Dailies, Trade Journals and webcast on websites of the company/ MOP/CEA. Copies of the same are sent to all qualified contractors associated with POWERGRID in the past. In addition, the IFBs related to ICB are also published in international newspapers along with copies to Embassies / High commissions.

To continue this process further, committees of eminent experts have been constituted to advise on various issues related to procurement, project implementation, financial and environmental & social safeguards aspects etc. The purpose of such committees is to bring more transparency & efficiency in our decision making process. The committees would not only provide guidance but critically evaluate POWERGRID's working.

CONVERGENCE WITH TELECOM

The synergic convergence between transmission and telecom technologies promises unique opportunities as has already been established worldwide in developed and developing countries. Opening up of the domestic long distance telecom sector in India offered an opportunity to POWERGRID in line with worldwide trend to exploit telecom market through convergence of power and telecom sector by making available a cost effective, high quality telecom infrastructure on its existing and planned transmission infrastructure and "to create value" for its business. Thus, to exploit the synergy of transmission business with advantages of inherent communication infrastructure, POWERGRID diversified into Telecom business.

POWERGRID is in unique advantageous position in the telecom industry as it is establishing its broadband optical network on its overhead transmission lines, which is sturdy, secure and free from any interference by pests or vandalism. This is obvious because the optical network would run along with EHV power transmission lines which would be impossible to interfere with. On the other hand, other telecom players are establishing underground networks, which could suffer from problems of interference, deliberate or otherwise. Added to this, POWERGRID has provided overhead links with self resilient rings to ensure highest availability of the network.

Out of the total planned telecom network of 20,000 Kms POWERGRID has already established a network of over 18,200 Kms (As on December, 2005) and enroute has connected all the metros and major cities viz Delhi, Mumbai, Chennai, Kolkotta, Bangalore, Hyderabad etc. rural and remote areas in the country.

It is worth mentioning that POWERGRID connectivity covers remote areas and other cities in various regions, which will be of strategic interest to various telecom players viz.

- North-Eastern; Agartala, Guwahati, Imphal, Itanagar, Kohima, Shillong, Tezpur, etc.
- Northern : Jammu, Pathankot, Srinagar, Udhampur, Ambala, Chandigarh, Jallandhar, etc.
- Western: Bhopal, Indore, Nagpur, Jabalpur etc
- Southern : Cochin, Trivenderum, Trichur, Coimbatore etc.

The complete network is expected to be fully operational soon.

POWERGRID has deployed state-of-the-art Dense Wave Division Multiplexing (DWDM)/ Synchronous Digital Hierarchy (SDH) technology and is utilizing the latest G 652 fibres for its Optical Fiber Composite Overhead Ground Wire (OPGW) which is installed on Extra High Voltage (EHV) 400/220 KV transmission lines. The deployment of flexible network architecture of high capacity DWDM/ SDH is compatible with all the upper layer equipment including Infrastructure Provider (IP) routers, Asynchronous Transfer Mode (ATM) equipment etc. and can be integrated with the system. The network is scalable from present capacity of 120 Gbps to 15 Terabit capacity and is capable of both Layer 1 - DWDM/ SDH and Layer 2 - switching using Ethernet over SDH. The network supports Ethernet over DWDM/ SDH on fast Ethernet and Gigabit Ethernet levels. The bandwidth capacity can be enhanced to terabit level and can be provided as and when required.

An Integrated Network Management System (NMS) with National level control center in Delhi alongwith Regional level control centers at Kolkotta, Bangalore, Mumbai provides real time monitoring of the telecom network. NMS can monitor each and every customer trail and provide online information for quick remedial measures. The NMS is also capable of working with third party equipment through interface for third party Element Management System (EMS) system. The network management system provides real time monitoring of the network and the services are available round the clock in the event of any problem and for quick remedial measures.

POWERGRID has obtained Infrastructure Provider license-II (IP-II) license and had also obtained ISP category 'A' license to provide internet services in the country. POWERGRID is also exploring Joint Venture opportunities with potential telecom players for enhancing its business. POWERGRID's Broadband Telecom network can provide the "convergence" of various traffic viz. voice, fax, data and multimedia over a single multipurpose network. The telecom services that can be provisioned include:

- Leasing of bandwidth capacity
- Internet Access Lines
- Ethernet private leased line (Point to Point & Point to Multi-Point)
- Video-conferencing
- Virtual Private networks
- MPLS (Multi Protocol Label Switching) based VPNs
- Voice over Internet Protocol (VOIP)

Based upon the high availability and competitive prices, POWERGRID has leased out capacities to various customers which include NLDOs, ILDs, ISPs, Call Centers, Government Agencies, Corporates etc. who are extremely satisfied customers.

POWERGRID is also exploring strategic alliances with various State Electricity Boards (SEBs), which shall enable it to reach rural, uneconomic and backward areas by utilizing their T&D system and fulfilling their E-governance needs. This will supplement Government of India's effort to accelerate the application of Information Technology and in bridging the digital divide gap and providing telecom services at most economic prices for the benefit of common man.

POWERGRID is committed to play a vital role in the economic development of the country and shall be relentlessly pursuing the responsibilities bestowed on it.

EXISTING/PROPOSED INTER-REGIONAL TR. CAPACITY (MW)

	Existing	By 2011-12	Total
EAST-NORTH			
Dehri-Sahupuri 220 kV S/c	150		150
Sasaram HVDC back-to-back	500		500
Muzaffarpur-Gorakhpur 400 kV D/c		2000	2000
Patna - Balia 400 kV D/c		2000	2000
Biharshariff - Balia 400 kV D/c		2000	2000
Barh - Balia 400kV D/c		2000	2000
North Karnanpura - Balia 765 kV S/c		2250	2250
132 KV inter-regional Capacity	50		50
- Rihand-Sonenagar 132 KV D/c			
Sub-total	700	10250	10950
EAST-WEST			
Budhipadar-Korba 220kV 3ckts.	450		450
Rourkela-Raipur 400kV D/c	1400		1400

Rourkela - Raipur 400kV D/c (2nd)		1400	1400
Ranchi - Sipat 400kV D/c		1400	1400
N'Karanpura - WR Pooling point 765kV S/c		2250	2250
Sub-total	1850	5050	6900
WEST-NORTH			
Vindhyachal HVDC back-to-back	500		500
Auriya-Malanpur 220 kV D/c	200		200
Gwalior-Agra 765kV D/c		1000	1000
Zerda-Kankroli 400kV D/c		1000	1000
RAPP-Nagda 400kV D/c		1000	1000
Gwalior-Agra 765kV 2nd S/c		1000	1000
Ujjain - Kota 220kV D/c	200		200
Sub-total	900	4000	4900
EAST-SOUTH			
Gazuwaka HVDC back-to-back	500		500
Balimela-Upper Sileru 220kV D/c	150		150
Talcher-Kolar HVDC bipole	2000		2000
Augmentation of Gazuwaka HVDC Back to Back	500		500
Upgradation of Talcher-Kolar HVDC Bipole		500	500
Sub-total	3150	500	3650
WEST-SOUTH			
Chandrapur HVDC back-to-back	1000		1000
Kolhapur-Begaum 220kV D/c	200		200
Barsur-L. Sileru 220 kV HVDC Monopole	200		200
Ponda-Nagajhari 220kV D/c	200		200
Sub-Total	1600		1600
East-North East			
Bongaigaon-Siliguri 400kV D/c	1000		1000
Birpara-Salakati 220kV D/c	300		300
Transmission lines for New Projects in		700	700
North Eastern Region			
Sub-total	1300	700	2000
Total	**9,500**	**20,500**	**30,000***

*As per National Electricity Plan of CEA, this capacity is envisaged to be enhanced to about 37,200 MW by 2011-12 for which additional links are being planned.

Chapter - 23.4

POWER FINANCE CORPORATION LTD.

The Power Finance Corporation Limited (PFC) was incorporated in 1986 as a Development Financial Institution (DFI) dedicated to Power Sector. Since then, PFC has been playing an increasingly important role in mobilizing financial resources from domestic and overseas sources at optimum cost and in providing various kinds of financial assistance to power projects. As a DFI, PFC also focuses on the institutional development of its borrowers in the state power sector. Reserve Bank of India registered the Corporation as Non-Banking Financial Company in February 1997. PFC's funding criteria are based on borrower's credit worthiness and project viability. PFC's mission is to excel as an excellent development financial institution in the power sector committed to the integrated development of the power and associated sectors by channeling the resources and providing financial, technological and managerial services for ensuring the development of economic, reliable and efficient systems and institutions.

PFC envisions being a dominant player in financing and developing sustainable and globally competitive power sector.

The borrower profile of PFC comprises of State Power Utilities, State Power/Electricity Departments, Central Power Utilities, Joint Sector Power Utilities, Private Sector Power Utilities, Municipal Bodies, Autonomous Bodies, Power Equipment Manufacturers and Independent Power Producers.

The loans provided by the Corporation are additional to Central Plan Allocation (in respect of SEBs, etc.) and based on the viability of the entity / promoters and merits of the individual projects.

The Power Finance Corporation is a schedule 'A' organization as per DPE guidelines' classification.

2.0 PERFORMANCE HIGHLIGHTS

As on 31.12.2005, PFC has sanctioned loans of the order of Rs.17310 crore (during 2005-06) for a wide range of power projects in various parts of the country and disbursements are to the tune of Rs.7695 crore.

The Authorized Share Capital and the Paid-up (equity) capital of the Corporation stood at Rs.2000 crore and Rs.1030.45 crore, respectively.

Profit After Tax (provisional) for the three quarter ended on 31st Dec 2005 was about Rs. 756.31 crore.

PFC had paid a dividend of Rs. 385 crore for the year 2004-05 and an interim dividend of Rs.70.24 crore for the year 2005-06 to the Govt. of India.

Besides being a consistently profit-making Corporation, PFC was placed in the highest category of 'Excellent' for the twelve consecutive years, by the Govt. of India on the basis of its overall performance since the year 1993-94. PFC has figured in the top 10 Performing PSUs list for the year 1998-99, 1999-2000, 2001-02, 2002-03 and 2003-04 for outstanding performance shown against Memorandum of Understanding (MoU) targets.

FINANCIAL PERFORMANCE AT A GLANCE (LAST 3 YEARS)

(Rs. crore)

	2002-03	2003-04	2004-05
Sanctions	14001	16472	18573
Disbursements	7338	8974	9405
Profit before tax	1368	2115	1396
Profit after tax	1172	1607	984
Dividend	235	322	385

3.0 RESOURCE MOBILISATION – DOMESTIC

Funds from the domestic market are mobilized at competitive rates through bonds/term loans from banks/ Financial Institutions. As on Dec 2005, Corporation has raised Rs. 8098 crore out of which Rs.2661 crore were raised through long and medium term loans from banks, Rs.2877 crore as short-term loans from various banks and Rs. 2560 crore by way of taxable bonds.

4.0 EXTERNAL CREDIT UTILISATION

4.1 ASIAN DEVELOPMENT BANK (ADB)

Asian Development Bank has approved a second line of credit to PFC for an amount of US dollar 150 million for power projects in the reform-oriented states and the agreement has been signed on December 11, 2003. Presently, power utilities of West Bengal and Maharashtra State are utilizing this line of credit. For these two states, 34 projects amounting to US dollar 50 million have been identified. As PFC could not identify more projects, the line of credit has been short closed to US dollar 50 million. US dollar 2.49 million has been utilized till date.

4.2 EXPORT DEVELOPMENT, CANADA

Export Development Canada (EDC) has approved a line of credit to PFC for an amount of US dollar 75 million for

the power projects and the agreement has been signed on June 6, 2001. Presently, power utilities of Himachal Pradesh and Uttaranchal are utilizing this line of credit. For these states, 3 projects amounting to US dollar 11 million have been identified. US dollar 2.01 million has been utilized till date.

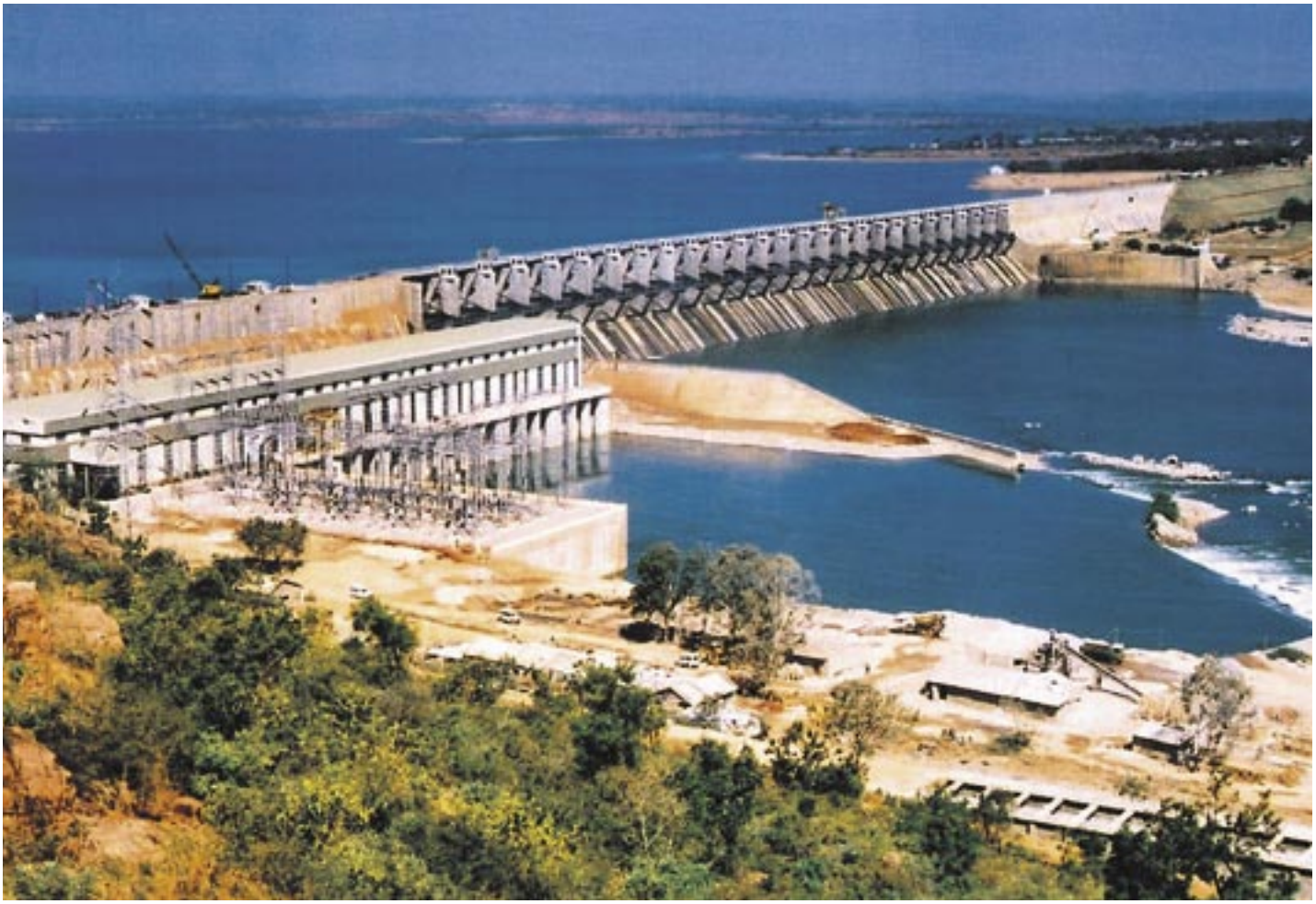
4.3 KfW-GERMAN FINANCIAL COOPERATION

PFC has negotiated a Line of Credit (LOC) of ∈ 100.56 million with KfW under "German Financial Cooperation with India- Renewable Energy Program PFC II" for undertaking Rehabilitation and Modernization of 9 old Hydro power plants of Uttaranchal Jal Vidyut Nigam Ltd. The total loan under this LoC facility consists of a soft portion of ∈ 35.56 Million and a commercial portion of ∈ 65 Million amounting a total of ∈ 100.56 Million. The facility also envisages a grant of ∈ 3.33 Million for undertaking feasibility studies and organizing training programs.

5.0 INSTITUTIONAL DEVELOPMENT OF POWER UTILITIES

PFC has been adopting a proactive and pragmatic approach to encourage improvement in the financial and operational efficiency of the state power sector. Keeping this in view, Reform Operational and Financial Action Plans consisting of a series of time bound action plan for different functional areas of the utilities are formulated. Besides aiming at bringing about efficiency improvements in the state power sector, R-OFAP focuses on reform/ restructuring activities needed to create an institutional framework for the self-sustainability of the sector in the long run.

These Action Plans are formulated with active participation of the concerned utility and approved by the respective Board of the Utilities. The implementation of various activities included in OFAP is monitored regularly and progress report on the same is sought from the utilities. As



Almati Dam Power House in Karnataka financed by PFC

on 31st Dec 2005, Action Plans are in place for 41 utilities including 9 SEBs, 16 SGCs, 11 T&D companies and 5 Department-run power utilities. These Action Plans have been instrumental in bringing about a perceptible change in quantitative and qualitative performance of State Power Utilities functioning.

6.0 OPERATIONAL HIGHLIGHTS

The Company issued sanctions for Rs.17310 crore of loans and grants during the period from 1st April 2005 to 31st Dec 2005 compared to Rs.13409 crore during the same period last year. An amount of Rs.7695 crore was disbursed during the same period to state, central and private sector entities, compared to Rs.5891 crore disbursed during the same period in the last year. With this the cumulative sanction of Rs 89325 crore, disbursement of Rs.57810 crore of loans and grants have been made by the Company as on 31st December, 2005.

7.0 FINANCING OF STATE AND CENTRAL SECTOR GENERATION PROJECTS

7.1 HYDRO PROJECTS

With a view to reverse the trend of declining share of hydropower in the country's total installed capacity, the Company is proactively identifying and providing financial support to hydro generation projects. During the year, major projects financed include Tehri HEP-I (4 x 250 MW) of THDC, Kameng HEP (4 x 150 MW) of NEEPCO, Koteshwar HEP (4 x 100 MW) of THDC.

During the period, the Company sanctioned loan worth Rs.3924 crore for hydro projects and an amount of Rs.2047 crore was disbursed. The cumulative financial support provided by PFC for hydro Generation schemes are Rs.16249 crore, out of which Rs.9860 crore has been disbursed till 31st December, 2005.

The important projects commissioned include Kau-Tlabung small HEP (2 x 1.5 MW) of Mizoram, Almati Dam Power House (2 x 55 MW) of KPCL, Sardar Sarovar 3 (400 MW) of SSNL & Pykora HEP (150 MW) of TNEB.

7.2 THERMAL PROJECTS

The Company is providing finance to Thermal Generation projects for their timely completion. Major generation projects sanctioned during the period from 1st April to 31st Dec, 2005 under review include Tenughat extension Stage II (3 x 210 MW) of TVNL, Establishment of 1 x 300 MW lignite based TPS of GIPCL, Sagardighi TPS Ph- I Unit 1&2 (2 x 250 MW) of WBPDCL. 2x300 MW of Yamunanagar TPS.

During the period, the Company has sanctioned loans amounting to Rs.7493 crore and disbursed an amount of Rs.2217 crore. The cumulative financial support provided by the Company for Thermal Generation schemes is Rs.32276 crore, out of which Rs.18050 crore has been disbursed till 31st December, 2005.

The major projects commissioned during the period include Gas Based CCPP Unit 2 (49.8 MW) at Karuppur of Aban Power.

8.0 FINANCING OF PRIVATE SECTOR POWER PROJECTS

PFC has so far supported 9936 MW of generation capacity by way of sanctioning financial assistance of about Rs. 7552.11 crore to 50 power projects and an amount of Rs.3382.66 crore has been disbursed. Also 4 guarantees have been approved worth Rs. 1097 crore. Major projects include 4x100 MW Vishnuprayag HEP of M/s. Jaiprakash Power Ventures in Uttaranchal, 4x250 MW of Rajgarh TPP of M/s Jindal Power Ltd. in Chattisgarh, 445 MW and 469 MW gas based plants of Konaseema EPS Oakwell and Gautami Power in Andhra Pradesh respectively, 1500 MW and 1095 MW gas based plant of M/s Essar Power Ltd. and Torrent Power Generation Ltd. in Gujarat respectively etc.

During the current year 2005-06, disbursements of Rs.745 crore have been made as on 31.12.05 and sanctions of approx Rs.2000 crore is under consideration. During the year 119.8 MW and 57 MW gas based CCGT of Aban Power and Arkay Energy respectively in Tamil Nadu have been commissioned. Cumulatively, 1866 MW generation capacity in private sector has been commissioned with PFC support.

9.0 RENOVATION MODERNISATION & LIFE EXTENSION OF THERMAL & HYDRO PLANTS

Renovation, Modernization and Life Extension of old thermal and hydro plants is a priority area of financing by PFC. As on 31.12.2005, PFC has sanctioned loans worth Rs. 5180 crore towards R&M Thermal and Rs. 1463 crore towards R&U Hydro schemes of various power utilities. Out of above an amount of Rs. 3003 crore and Rs. 691.43 crore has been disbursed, respectively.

10.0 ACCELERATED POWER DEVELOPMENTS AND REFORM PROGRAMME (APDRP)

During financial year 2005-06 (upto December 31, 2005), PFC committed counterpart-funding amounting to Rs.456.34 crore for distribution schemes in various states. Counterpart funds amounting to Rs. 207.09 crore were disbursed and loan documents for 18 schemes with the loan amount of Rs.219.64 crore were executed during the

year. Distribution network in major cities for which PFC has sanctioned counterpart funding during 2005-06 include Margao Town, Panjim, Agra etc.

11.0 ACCELERATED GENERATION & SUPPLY PROGRAMME (AG&SP) DURING 10TH PLAN.

The AG&SP scheme has been extended to 10th Plan. The AG&SP scheme for the 10th Plan envisages the following:-

1. The assistance under the AG&SP scheme shall be limited to State sector Renovation & Modernization (R&M) of thermal power plants and Renovation & Uprating (R&U) of hydro power plants including R&M of power plants of Damodar Valley Corporation (DVC);
2. The State sector generation projects including those based on non-conventional energy sources are covered which are to be commissioned in the 10th Plan;
3. Grants under AG&SP scheme will be provided to SEBs, SGCs and State Power Departments for carrying out the studies, which help to achieve policy objectives of the Government relating to power sector. These include power sector reform and restructuring studies, system studies, R&M studies, life extension studies, retainer consultancy for R&M and environment/ social studies;
4. Interest subsidy under the scheme is the difference of prevailing PFC interest rate and G Sec rate limited to 3% and 4% for North Eastern states as the case may be.
5. During the financial year, 2004-05, PFC disbursed an amount of Rs.1820 crore under AG&SP and the Ministry of Power released an amount of Rs.250 crore.

During the financial year 2005-06 an amount of Rs. 1743 crore has been disbursed by PFC under AG&SP during April 05 to Dec 2005.

12.0 FINANCIAL ASSISTANCE FOR POWER SECTOR STUDIES

As part of its developmental role, the Company has been extending financial assistance in the form of grants, interest free and/or concessional loans to its Borrowers to take up important power sector studies in priority areas of

24 MW Wind Power Project financed by PFC

R&M, Distribution Management, Reform & Restructuring, Institutional Development, etc. The major studies sanctioned during the year include pre-construction study of Kasang HEP Stage-1 of HPSEB, database, training, commercial system for reform awareness of PSEB, Loss diagnostic study in Ajmer Discom, RLA&LE studies of Chittaura, Salawa & Bhola hydro power house of UPJVNL, Study for development of fund flow pattern and accounting system in Tripura etc. Major studies completed during the year under review include R&M/LE Study of Nirgajini HEP & Matatila HEP of UPJVNL, RLA & LE Study of Paras & Koradi TPS of MSEB, Study for preparation of Good Governance Code of UPPCL, etc.

During the year 2005-06, Power Finance Corporation has sanctioned grants amounting to Rs.239 lacs and disbursed Rs.312 lacs to various power utilities in the state sector for reform, restructuring, development and computerization as on 31.12.2005. PFC also sanctioned a concessional loan amounting to Rs.23.95 crore and disbursed Rs.3.47 crore up to 31.12. 2005.

13. INDUSTRIAL RELATION, SOCIAL SECURITY, HUMAN RESOURCE DEVELOPMENT & REPRESENTATION OF WOMEN EMPLOYEES

The Industrial Relations within the organization have been very cordial and harmonious with each employee committing himself/herself entirely to the objectives of the organization. In the year 2004-05, Per Capita Business (Disbursement) stood at Rs.34.84 crore and Profit after tax at Rs.3.63 crore, which bears testimony to the sound organizational culture prevailing in the corporation.

A comprehensive package to ensure social securities is in place in PFC which inter-alias includes contributory

Sagardighi Thermal Power Project, (2x300 MW) of West Bengal Power Development Corporation Limited funded by PFC

provident fund, gratuity, range of insurance scheme etc. and employees economic rehabilitation scheme. PFC lays special emphasis on medical facilities and health care for its employees and their families whereby they can avail best health care facilities. Other aspect like promotion of sports, cultural heritage, community development etc. are also given due importance by organizing various events.

In our scheme of human resource management, training and human resource development has been accorded a very high priority to update and refresh the knowledge and skills of the employees as also to rejuvenate them. PFC has been organizing and sponsoring people to a variety of technical, functional and behavioral development programs.

12.0 CONSULTANCY SERVICES

12.1 PFC's Consultancy Services Unit has grown in operations manifold in providing consultancy services and has generated an atmosphere of competitive pricing by consultancy organizations in the areas where PFC has been providing such services.

During the year 2005-06 (up to 31.12.2005), PFC has further enhanced its reputation as a premier Consultancy Organization by bagging new assignments in new areas. The Corporation broadened its folio of Consultancy Assignments, both in terms of number of assignments to 5, up to Dec 2005, as also their value amounting to Rs.5.23 crore, the maximum value of assignments in a year. PFC also expanded its client base and moved up the value chain by taking up the assignment on "Overall Advisory Services" for setting up a thermal station by DPSCL, one of the oldest licencees in the country. Besides, PFC has also successfully undertaken an assignment on Corporatisation of its Power Sector. Further, 2 Utilities have shown interest in PFC undertaking the assignment on Computerization of their Accounting & Financial Accounting Systems.

While PFC continues to undertake the assignments on regulatory matters like tariff, PFC shall focus on assignments relating to: -

- Developing Financial Restructuring Plans, business models: short term and long term, and reform implementation.
- Human Resources Development plans to support /facilitate structural changes in state power sector including retaining / redeployment of personnel.
- Developing Accounting Systems including computerization of the unbundled utilities.

13.0 NEW BUSINESS ACTIVITIES: FUNDING OF LARGE MEGA GENERATION PROJECT

The Government has taken an initiative for facilitating the Development of five ultra mega power projects of 4000 MW capacity each under tariff based competitive bidding route.

Madhya Pradesh, Gujarat, Chhattisgarh, Karnataka and Maharashtra are the States in which a ultra mega project each is envisaged to be set up in the first phase.

Power Finance Corporation has been entrusted with the work relating to formation of Shell companies which are envisaged to carry out development activities including tie-up of various inputs/clearances before handing over the project to the final developers. The names of the Shell companies have already been registered and Chief Executives of the shell companies are already in place and have initiated the action of appointment of consultants for preparation of project report and Environment Impact Assessment Studies etc. The expression of interest in respect of Mundra project, Gujarat and Sasan Project, Madhya Pradesh has already been published in the newspaper.

Chapter - 23.5

RURAL ELECTRIFICATION CORPORATION LIMITED (REC)

Rural Electrification Corporation Limited (REC) was incorporated as a Company under the Companies Act, 1956 in the year 1969 with the main objective of financing rural electrification schemes in the country. Subsequently, in the year 1992, REC was notified as a Public Financial Institution under Section 4A of the Companies Act, 1956. in the year 1998, REC was registered as a Non-Banking Financial Company (NBFC) under Section 45 IA of the RBI Act, 1934. The Government, of India upgraded REC as a Schedule "A" Enterprise in the year 2001. REC was granted Mini Ratna Grade-I Status by Govt. of India in the year 2002. The mandate/object clause of REC was expanded in the year 2002 to include financing of all projects including transmission and generation without any restriction on population, geographical location or size.

REC has continued to grow, since its inception in 1969, as a lead institution for financing schemes for providing extension and improvement in the supply of electricity in the rural areas, electrification of villages, dalit bastis and households Below Poverty Line (BPL), and energisation of agricultural pumpsets.

Besides attending to its core objectives of financing schemes for extending and improving the rural electricity infrastructure, REC has started funding large/mega generation projects, and transmission and distribution projects, which are critical to the projected addition of installed capacity during the Tenth and Eleventh Plans.

Highlights of Performance

Over the last five years, REC recorded substantial growth in its performance parameters. The highlights of performance of REC for the year 2004-05 along with the comparative figures for the preceding four years are given below:-

(Rs. in Crore

	2000-01	2001-02	2002-03	2003-04	2004-05
Loan sanctioned	6308	6764	12125	15978	16316
Loan Disbursed	4109	4722	6607	6017	7885
Recovery of Dues	3582	4064	6673	5003	6817
Resource Mobilisation	1611	3360	4213	3988	8501
Profit before Tax	453	503	768	803	1038
Profit after Tax	337	388	578	612	801
Networth	2148	2466	2862	3264	3779
Dividend	67	120	174	183	235
Business per employee	8.29	9.72	15.07	16.55	21.98

Memorandum of Understanding

The Corporation has received "Excellent" rating consistently since the year 1993-94 when the first MOD was signed with the Government. Even for the year 2004-05, the Corporation recorded "Excellent" results in terms of the parameters of the MOD,

Share Capital

There was no additional subscription to the Equity Share Capital during the year 2004-05 and the Paid-up Equity Share Capital of REC as on 31st March, 2005 stood at Rs.780.60 crore, which is wholly subscribed by the Govt. of India, against the Authorised Share Capital of Rs.1200 crore

Mobilization of Funds

The amount mobilized from the market during the year 2004-05 was Rs.8501 crore, which includes Rs.2000 crore raised by way of term loan from Life Insurance Corporation of India, Rs.1472 crore by way of syndicated loan from commercial banks, Rs. 2440 crore by way of capital gains tax exemption bonds and infrastructure bonds, Rs. 2589 crore by way of priority & non-priority sector bonds including Rs.250 crore raised through structured deal with swap option as long term funds. Besides, cash credit limits of Rs. 1200 crore were tied up with different banks for day-to-day operations. The debt instruments of REC continued to enjoy AAA rating -the highest rating assigned by CRISIL, CARE and FITCH.

Cumulative Performance of REC upto 31.3.2005

Over the last 36 years, REC has cumulatively sanctioned Rs.79772 crore for 42219 projects and disbursed Rs.44550 crore as on 31.3.2005 as financial assistance on relatively softer terms to the SEBs, Electricity Departments of State Government and other Power Utilities. Upto 31st March, 2005, 3,05,829 villages have been reported electrified and 83,83,254 pumpsets have been reported energized under the projects financed by REC.

Signing of agreements

The quadripartite/tripartite/bi-partite agreements for implementation of the projects under RGGVY in respect of all 27 participating states have been concluded.

About 10,000 villages have been targeted for electrification of rural households during 2005-06.

1. Progress of Performance upto November. 2005 and targets expected to be achieved for the remaining period of 4 months upto 31.3.2006 in respect of other regular activities.

Transmission & Distribution (T&D)

1.1 During the period between April 2005 - November 2005, the Corporation under its regular activities has sanctioned 176 projects involving a loan assistance of Rs.2104 crore under T&D, which includes 22 projects sanctioned for counterpart funding of Rs.17 crore under APDRP. It is anticipated that a sanction of Rs.3000 crores will be achieved under T&D projects by 31st March, 2006.

1.2 The Power Utilities/entities, have for the Financial Year 2005-06, drawn a loan amount of Rs.686 crore upto 30.11.2005, for system strengthening, electrification of un-electrified villages/hamlets/dalit bastis, intensive electrification of already electrified areas, and energisation of pumpsets. It is anticipated that a disbursement of Rs.2500 crores will be achieved under T&D projects by 31st March, 2006.

Generation Projects

1.3 Progress upto 30.11.2005

For the financial year 2005-06 (Upto 30.11.2005), REC has sanctioned term loan amounting to Rs.4383.24 crore. During this period, disbursement of Rs.382.00 crore has been made against the on-going generation projects.

1.4 Expected achievements upto 31.3.2006

Target for sanction is more than Rs.1600 crore for the remaining period.

Projected disbursement during 2005-06 is Rs.1500 crore, out of which Rs.382.00 crore has been disbursed upto 30.11.2005.

Short-Term Loans/Debt-Refinancing Progress upto 30.11.2005

During the current financial year 2005-06, the Corporation has already sanctioned Short Term Loans/ Debt Refinancing proposals of Rs.1970 crore, and disbursed Rs.642.50 crore.

1.5 Expected Achievements upto 31.3.2006

Targetted disbursement for Short Term Loan / Debt Refinancing upto the end of March, 2006, is of the order of Rs.1500 crores and the Corporation is expected to exceed the same.

1.6 Activities in North Eastern States

Generation Projects

A total disbursement of Rs.561.2 lakhs has been made against the four generation projects in the North Eastern States in the Finanical Year 2005-06 upto 30.11.2005 (3 projects in Arunachal Pradesh and 1 project in Meghalaya) as detailed below:

Project	Capacity (In MW)	Disbursement in 2005-06 upto 30.11.2005) (Rs. in lakh)	Remarks
Halipani HEP Arunachal Pradesh	12	162.0	Under Implementation
Deopani HEP Arunachal Pradesh	0.5	5.9	Commissioned in October,2004
Mattainalah HEP Arunachal Pradesh	0.5	44.3	Commissioned in March, 2005
Myntdu HEP Meghalaya	84	349.0	Under Implementation
Total :		**561.2**	

T& D Projects

A provision of Rs. 11 crores has been made for the North Eastern States including Sikkim, for their intensive electrification and system improvement works, based on the programme indicated by them, for the year 2005-06, which is expected to be disbursed. A system improvement scheme for loan amount of Rs. 4 crore is expected to be sanctioned shortly for Nagaland. Concessional interest rates are applicable for the NE States/SEBs in respect of schemes sponsored by them.

2. Mobilisation of Funds

The amount mobilized by REG during the year 2005-06 (upto 30th November, 2005) was Rs. 3196 crore which included Rs. 1521 crore by way of Capital Gains Bonds, Rs.985 crore by way of REG Taxable Priority Sector Bonds and Rs.690 crore by way of Term Loan from Banks. The total borrowing programme of the Corporation for the

Transformation of lives in rural India with accessability to Power

year 2005-06 is Rs.9000 crores. The balance amount of Rs.5804 crore is proposed to be raised during the period from December, 2005 to March, 2006.

3. Pre-payment of high cost Bonds

During the year 2005-06, REG has so far exercised call option of Rs. 485.95 crore in respect of REG Bonds, as a part of the process of pre-paying higher cost of borrowings with cheaper funds raised from the market. During the remaining part of the year it is proposed to exercise additional call option on various debt instruments to the tune of Rs.190.00 crore besides normal redemption of Bonds.

4. Business Development

10.1 During the year 2005-06 REG has signed MOU with Jammu & Kashmir State Power Development Corporation (J&K SPDC) and Institute of Public Enterprise (IPE), Hyderabad under the Business Development Plan:

i) MOU with Jammu & Kashmir State Power Development Corporation was signed on 9th September, 2005 to finance 93 MW New Ganderbal HEP, Distt. Srinagar, 375 MW Pamai HEP, Distt. Poonch and 240 MW Kerthai HEP, Distt. Doda.

ii) MOU with Institute of Public Enterprise, Hyderabad was signed on 10th November, 2005 to jointly develop and conduct training programmes in power generation and distribution sector on identified subjects in technical, management, financial, applied behavioral Sciences and IT.

4.2 Award of Silver Medal to REC at IITF-2005

Rural Electrification Corporation participated in India International Trade Fair 2005 (IITF) by putting up its stall at Ministry of Power pavilion. REC was awarded Silver medal for excellence in presentation of Theme on Power at IITF-2005.

5. International Cooperation

5.1 Japan Bank for International Cooperation (JBIC) assistance

Negotiations are in advance stage with JBIC for a line of credit of Rs. 850 crores under ODA assistance (21 billion yen) for the Rural Electricity Distribution Backbone Project in the States of Andhra Pradesh, Madhya Pradesh and Maharashtra. The project envisages construction of about 750 new 33/11 KV sub stations and augmentation of 510 sub stations in these States. On implementation, these sub stations would assist in accelerating the pace of household electrification in the concerned States. This credit is expected to be sanctioned in the forthcoming Inter-governmental meeting in January 2006 and the loan agreement is likely to be signed during March, 2006.

5.2 Indo German Bilateral Cooperation

Discussions are on with Kfw Germany for a line of credit of Rs. 400 crores (72 million Euro) for the High Voltage Distribution System Project of Andhra Pradesh Southern Power Distribution Company Limited (APSPDCL). The project aims at reduction in distribution losses, failure rate of distribution transformer and avoidance of theft in agriculture sector and will ultimately help in improving the financial sustainability of APSPDCL. This loan is expected to be approved in the forthcoming Inter-governmental negotiations during December, 2005/January, 2006 and the loan agreement is likely to be signed during March, 2006.

5.3 USAID Assisted Distribution Reforms, Upgrades and Management (DRUM) Project

(i) Under the USAID assisted DRUM project, the Rural Utilities Service (RUS) of USA have been assisting REC to develop an alternative model for financing rural electrification programme to make it viable and

self-sustainable. For this purpose, visits have been exchanged between REC & RUS on several occasions and a draft outline of this Alternative Financing Model has been developed by REC which is being proposed to be developed further in consultation with RUS and tested on ground by taking up a few pilot projects.

(ii) The Central Institute for Rural Electrification (CIRE) at Hyderabad plays a significant role under DRUM as partners in the DRUM training and it had signed a MoU with M/s CORE International Inc. who have been engaged to conduct training activities under DRUM. CIRE has conducted the following training programmes under this arrangement:

a) Best Practices in Distribution Loss Reduction
b) Best Practices in Agriculture Pumpsets and Rural Demand Side Management
c) O&M in Distribution System.
d) Financial Management in Distribution Business.
e) Distribution efficiency and Demand Side Management.

(iii) A DRUM website has been launched under this project for dissemination of information regarding the progress of DRUM project. REC, as a partner in the DRUM project, has a presence in this website and will be required to contribute to its contents from time to time.

(iv) As a first step towards setting up of National Rural Electrification Resource Center (NRERC) under DRUM, the information regarding RUS policies and procedures has been put on local network of REC.

6. Central Institute for Rural Electrification (CiRE) of REC based at Hyderabad.

Progress made during current year upto 30.11.2005.

6.1 CIRE, the training wing of REC, has organized 15 training programmes and trained 389 officers of Power Companies and other power utilities. Of the above, 2 programmes are organized for REC Officers & Staff, 7 programmes are under DRUM/USAID and 6 regular programmes.

6.2 As per the direction of the Ministry of Power, CIRE organized a One-day orientation programme on

Transformation of lives in rural India with accessability to Power

"Energy Conservation Awareness" to the employees of CIRE & Project Office of Hyderabad. During the programme on "Appraisal of Generation Projects" for half day, the Chief Project Managers of REC were oriented on Implementation of Official Language in their offices. The participants of the programme on "Best Practices in Agriculture Pumpsets and Rural Demand Side Management" were taken to Green Business Centre, a unique building, located at Hyderabad to demonstrate the DSM measures and the equipment. They were also taken to the field visit in Mahesaram Mandal to demonstrate the efficient and inefficient pumping systems and also power supply through HVDS to agricultural consumers. The first two programmes under DRUM were inaugurated by Shri S. Padmanabhan, Senior Engery Adviser, USAID/India and Shri DR Pahuja , Director(TC), Ministry of External Affairs respectively.

6.3 During the period, CIRE was empanelled by the Ministry of External Affairs to organize international Training Programmes under ITEC/SCAAP. Also, CIRE has signed an MOU with Institute of Public Enterprise (IPE) on 10.11.2005 for organizing programmes jointly in specialized areas.

6.4 During the period under review, CIRE also organized talks on Vigilance Awareness and effective use of Official Language Hindi.

Anticipated targets to be achieved during the remaining period of the year i.e. upto 31.3.2006.

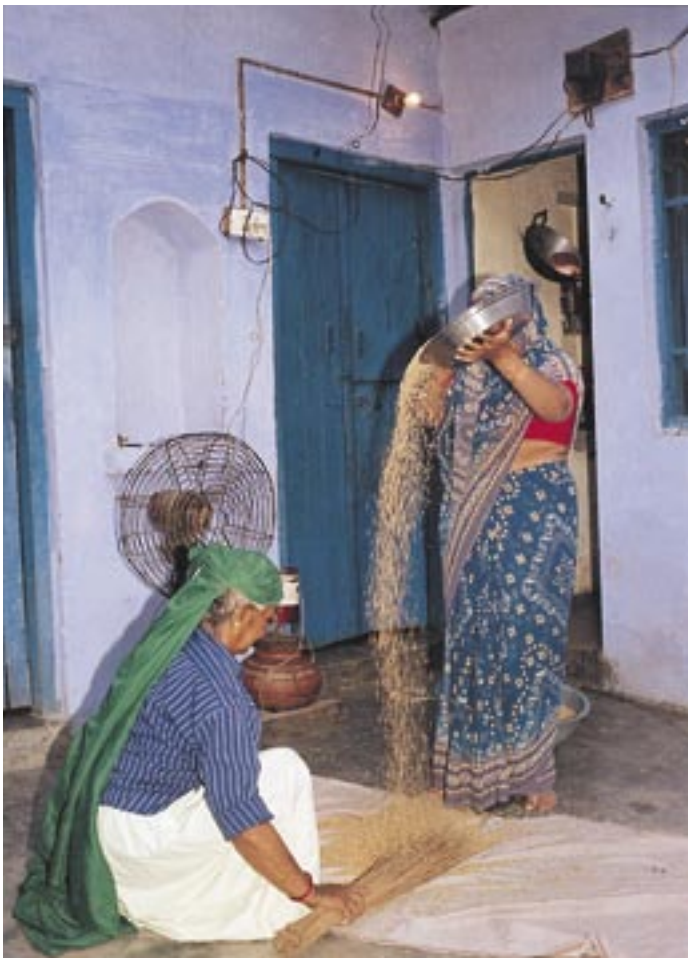
6.5 During the period from December, 2005 to March, 2006, CIRE propose to organize 10 programmes as under:

Regular Programmes	: 3
Programmes under DRUM/USAID	: 5
In-house programme on Hindi Translation for REC Employees	: 1
Programmes in association with IPE	: 1

B. Anticipated targets to be achieved during the remaining period of the year i.e. upto March 2006

1 Efforts would be made to get the pending disciplinary case completed.

2 Regular inspections would be carried out in respect of remaining 7 field offices.



Benefits of rural electrification

Chapter - 23.6

NORTH EASTERN ELECTRIC POWER CORPORATION LTD.

North Eastern Electric Corporation Ltd. (NEEPCO) was constituted in 1976 under the Indian Companies Act, 1956 with the objective of developing the power potential of the North Eastern Region of the country through planned development of power generation projects, which in turn would effectively promote the development of the North Eastern Region. Since then NEEPCO has grown into one of the pioneer Public Sector Undertaking under the Ministry of Power, Govt. of India, with an authorized share capital of Rs. 3,500 Crores and having an installed capacity of 1,130 MW (755 MW hydro & 375 MW thermal), which meets more than 66% of the energy requirements of the N.E. Region. The main objectives of Corporation are to add to the power generating capacity in the North Eastern Region by ensuring optimum utilization of commissioned generation projects, to generate adequate internal resources ensuring justifiable return on investment, to continue sustained efforts to obtain the receivables from State Electricity Boards/Departments, to execute and commission power projects, both hydro and thermal, within prescribed time frames, and to undertake long term feasibility studies and preparation of detail project reports for optimum development of hydro power resources of the North Eastern Region.

CAPACITY ADDITION PROGRAMME FOR THE 10TH PLAN:

The proposed capacity addition during the 10th Plan has been fixed as 155 MW (130 MW approx. Thermal and 25 MW Hydro). Out of this, Kopili H.E. Power Station Stage-II with one unit of 25 MW has already been completed.

1. POWER STATIONS UNDER OPERATION:

The following completed Projects are under Operation:

Sl. No.	Name of the Project	State	Installed Capacity
A. HYDRO			
1.	Kopili H.E. Power Plant	Assam	275 MW
2.	Doyang H.E. Power Plant	Nagaland	75 MW
3.	Ranganadi H.E. Power Plant	Arunachal Pradesh	405 MW
Sub Total (A)			**755 MW**
B. THERMAL			
4.	Assam Gas Based Power Plant	Assam	291 MW
5.	Agartala Gas Turbine Power Plant	Tripura	84 MW
Sub Total (B)			375 MW
	T O T A L		**1,130 MW**

Khandong Dam

Kameng HEP (600MW)

GENERATION FROM POWER STATIONS:

Sl. No.	Name of the Power Stations	MOU Target during 2005-06(RE)	Actual Generation upto 30th Nov.'05	Balance to be achieved upto 31st Mar.'06
A) HYDRO				
i)	Kopili H.E. Power Plant (275 MW), Assam.	1,208 MU	1,150 MU	58 MU
ii)	Doyang H.E. Power Plant(75 MW), Nagaland	172 MU	186 MU	_
iii)	Ranganadi H.E. Power Plant (405 MW),			
	Arunachal Pradesh	1,378 MU	1,224 MU	154 MU
Sub-Total (A)		2,758 MU	2,560 MU	212 MU
B) THERMAL				
i)	Assam Gas Based Power Plant (291 MW), Assam	1,550 MU	1,209 MU	341 MU
ii)	Agartala Gas Turbine Power Plant (84 MW), Tripura	596 MU	443 MU	153 MU
Sub-Total (B)		**2,146 MU**	**1,652 MU**	**494 MU**
TOTAL (A+B)		**4,904 MU**	**4,212 MU**	**706 MU**

Capacity index for hydro plants -94% achieved till November, 2005 against target of 89% for the whole year.
Availability for the thermal plants -83% achieved till November, 2005 against target of 88% for the whole year.

2 FINANCIAL

Rs. in Crs.

	Target (2005-06)(RE)	Achieved upto November, 2005	Balance to be achieved up to 31st March, 06
Sales	742	573	169
Receipt	690	688	02
Net Profit	91	104	_

3. PROJECTS UNDER EXECUTION

KAMENG H.E.P. (4X150 MW), ARUNACHAL PRADESH:

Kameng H.E. Project envisages installation of 4 (four) units of 150 MW each in West Kameng District of Arunachal Pradesh. The investment approval of the project was accorded on 02.12.2004 at an estimated cost of Rs. 2,496.90 Crs.(including IDC) at March 04 Price level. The project is scheduled to be commissioned by Nov, 2009.

Status of the Project:

- Work order for all major Civil, Hydro-Mechanical & Electro-Mechanical works awarded in December, 2004.
- For Switchyard package (Package-VI) and Transformer package (Package-VII), tenders invited and techno-commercial evaluation are under process.
- River diversion for Bichom dam stage-I completed. Coffer dam under progress. 39% excavation of Bichom Dam completed.
- Works on Adit-I, II, III and IV are under progress.
- Diversion works under progress in Tenga dam.
- 50% excavation completed in power house.
- Design & Engineering works of hydro-mechanical and electro-mechanical equipment under progress.

TUIRIAL H.E.P (2X30 MW), MIZORAM:

Tuirial H.E. Project is situated in Aizwal district of Mizoram.

All clearances accorded and project sanctioned in July, 1998. All major works of the project were under progress but, project works at present are held up because of agitation around the project area w.e.f. 09.06.2004 demanding illegal crop compensation and due to poor law & order situation. Continuation or otherwise of the project is being reviewed in view of increase in the project cost. Revised Cost (October, 2004 PL): firmed up for Rs. 687.80 Crs. (including IDC of Rs. 40.05 Crs.) by CEA on 03.11.2005.

4. PRESENT STATUS OF PIPELINE POWER PROJECT IN THE NORTH EASTERN STATES INCLUDING SIKKIM:

TIPAIMUKH H.E. (MULTIPURPOSE) PROJECT (1500 MW), MANIPUR:

The Tipaimukh Hydro Electric (Multipurpose) Project (1500 MW) is located in Churachandpur district of Manipur. The project envisages construction of 162.8 m high Rockfill Dam on river Barak to generate 1500 MW of power with 6 units of 250 MW each having firm power of 434.44 MW. The project in addition to hydro power generation would provide benefits of flood moderation. The annual design energy of the project is estimated to be 3,806 MU at 90% dependable year. CEA has accorded Techno-Economic Clearance to the project at an estimated present day cost (at December, 2004 price level) of Rs. 6,701.79 Crs. including IDC and FC of Rs. 816.40 Crs.

The above cost includes provisions for flood moderation, security, diversion of National Highway and NPV of forest land @ Rs. 422.06 Crs., Rs. 318.67 Crs., Rs. 157.74 Crs. and Rs. 1,100.78 Crs. respectively excluding IDC thereof. These costs are required to be delinked from the project cost so as to make the project economically viable.

PIB meeting held on 25.10.2005. CCEA clearance of the project is awaited. Technical specification and process for award of EPC contract are under progress.

5 PROJECTS UNDER SURVEY & INVESTIGATION AND DPR PREPARATION:

Sl. No.	Name of the Project	Installed Capacity	Present Status
1.	Ranganadi HEP-Stage-II, Arunachal Pradesh	130 MW	DPR is under preparation and to be completed by March, 2006.
2.	Pare HEP, Arunachal Pradesh	110 MW	DPR submitted to CEA on 26.12.2005

Under 50,000 MW Programme:

Under the 50,000 MW hydro-electric initiative launched by the Hon'ble Prime Minister, NEEPCO has been entrusted the work of preparation of DPR of the following hydroelectric projects in the state of Arunachal Pradesh and Meghalaya.

Sl. No.	Name of the Project	Installed Capacity	Present Status
1.	Kapak Leyak H.E. Project, Arunachal Pradesh.	160 MW	DPR is under preparation and to be completed by March, 2006.
2.	Talong H.E. Project , Arunachal Pradesh.	300 MW	DPR is under preparation and to be completed by March, 2006.
3.	Badao H.E. Project, Arunachal Pradesh.	120 MW	DPR is under preparation and to be completed by March, 2006.
4.	Dibbin H.E. Project, Arunachal Pradesh.	100 MW	DPR is under preparation and to be completed by March, 2006.
5.	Bhareli-I H.E. Project, Arunachal Pradesh.	1,120 MW	Work is held up due to non receipt of Environmental clearance.
6.	Bhareli-II H.E. Project, Arunachal Pradesh.	600 MW	
7.	Kameng Dam H.E. Project, Arunachal Pradesh.		600 MW
8.	Demwe H.E. Project, Arunachal Pradesh.	3000 MW	Survey & Investigation under progress.
9.	Mawhu H.E. Project, Meghalaya.	120 MW	

6. MOU rating of the Corporation for the last 2(two) years were excellent and it is also expected to achieve the same rating during 2005-06.
7. NEEPCO is the first CPSU under Ministry of Power to have been accredited with ISO 9001-2000 (Quality), ISO 14001-1996 (Environment) and OHSAS 18001-1999 (Safety).

Chapter - 23.7

SATLUJ JAL VIDYUT NIGAM LIMITED
Formerly Nathpa Jhakri Power Corporation Ltd.

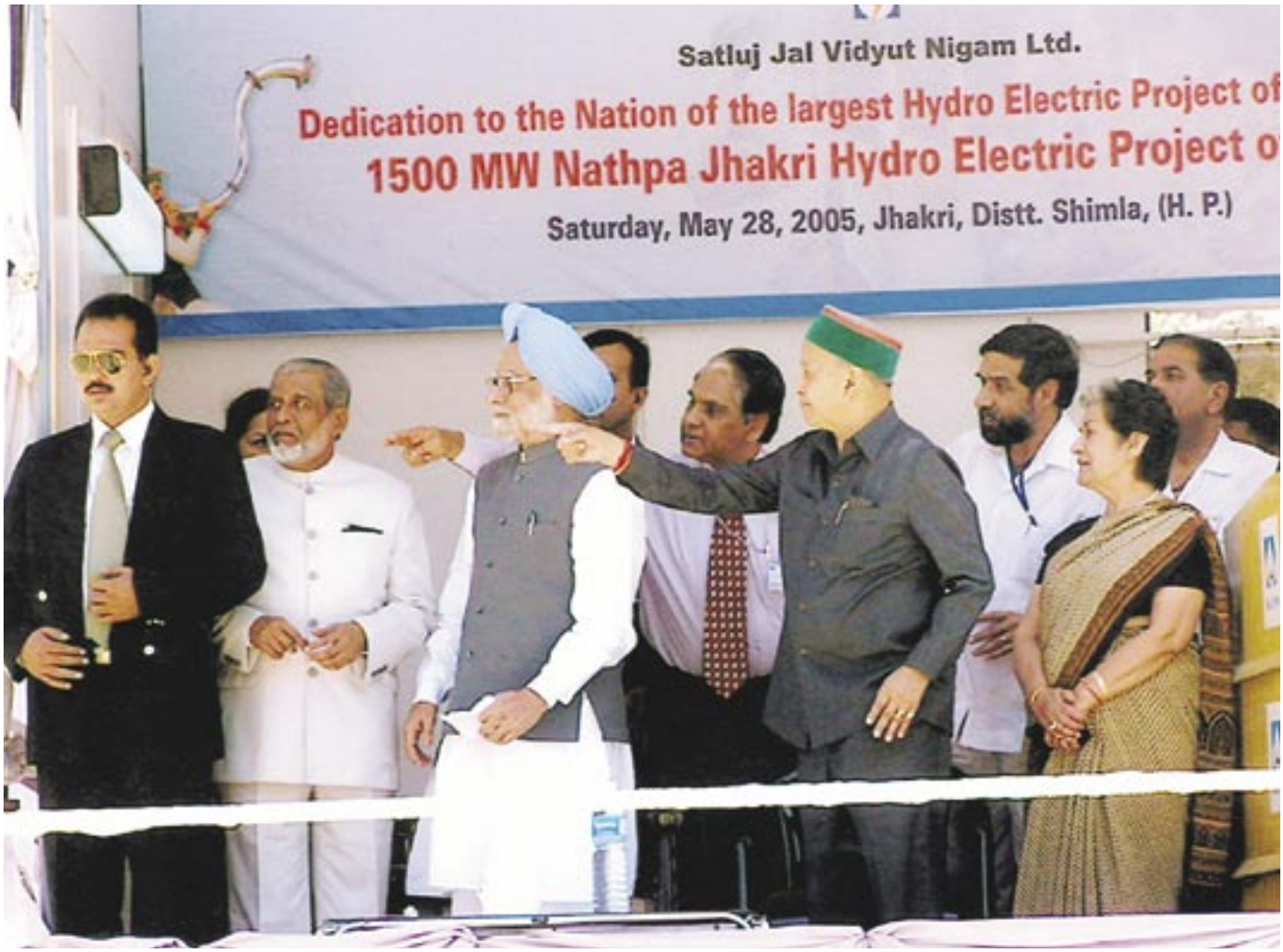
About SJVN

The Satluj Jal Vidyut Nigam Limited – SJVN (formerly Nathpa Jhakri Power Corporation Limited - NJPC) was incorporated on May 24, 1988 as a joint venture of the Government of India (GOI) and the Government of Himachal Pradesh (GOHP) to plan, investigate, organize, execute, operate and maintain Hydro-electric power projects in the river Satluj basin in the state of Himachal Pradesh and at any other place. The present authorized share capital of SJVN is Rs 4500 crores.

The Nathpa Jhakri Hydro – Electric Project – NJHEP (1500 MW) was the first project undertaken by SJVN for execution.

The Nathpa Jhakri Hydro – Electric Project – NJHEP (6 X 250 MW)

The 1500 MW, Nathpa Jhakri Hydro - Electric Project – NJHEP (the largest underground hydro - electric power Project) was the first project executed by SJVN, which has already been commissioned, as per the following schedule :



Dr. Manmohan Singh, Hon'ble Prime Minister with Late Shri P.M. Sayeed, former Minister of Power, Shri Virbhadra Singh, Chief Minister of Himachal Pradesh and other dignitaries at the Dedication Ceremony of the 1500 MW NJHPP of SJVN.

Unit	Synchronization	Commercial Generation
Unit - 6	November 23, 2003	January 02, 2004
Unit - 5	September20, 2003	October 06, 2003
Unit - 4	January 22, 2004	March 30, 2004
Unit - 3	February 13, 2004	March 31, 2004
Unit - 2	March 09.2004	May 06, 2004
Unit - 1	March 31, 2004	May 18, 2004

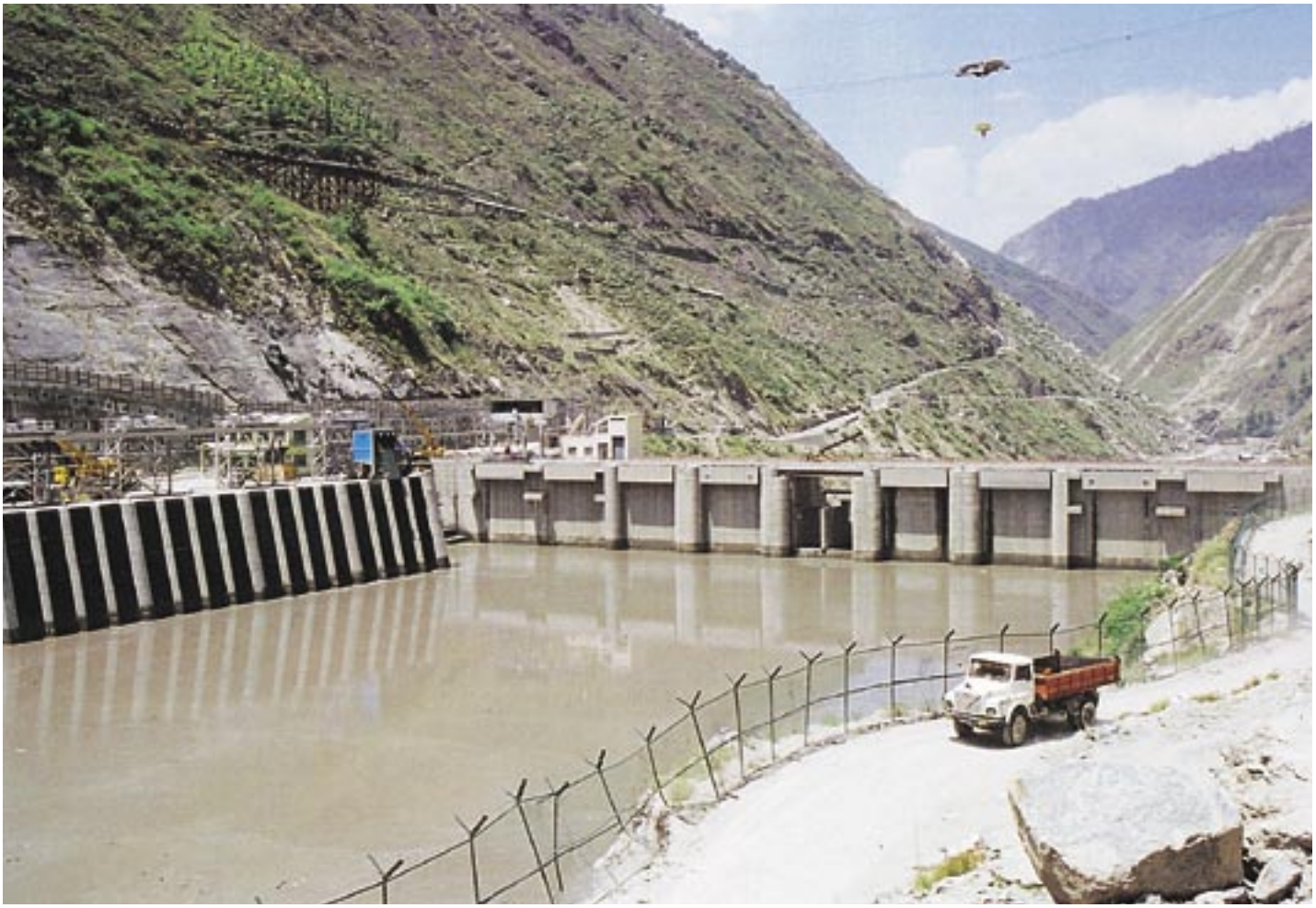
NJHE Project Benefits

Besides the social and economic up-liftment of the people in its vicinity, the 1500 MW NJHEP is generating 6950 MU of electrical energy in a 90% dependable year. It also provide 1500 MW of valuable peaking power to the Northern Grid.

Out of the total energy generated at the bus bar, 12 percent is to be supplied free of cost to the home state i.e. Himachal Pradesh. From the remaining 88% energy generation, 25% is to be supplied to HP at bus bar rates. Balance power allocated to different states / UTs of Northern Region by Ministry of Power,

Power Purchase Agreements (PPAs) have been signed with Eight beneficiaries i.e. with Punjab, Chandigarh, Haryana, Rajasthan, Delhi, Jammu & Kashmir, Uttar Pradesh and Himachal Pradesh;

Besides, indirect benefits have also accrued to the region by way of increase in agriculture and industrial production. In addition, the project has also provided gainful employment to a large number of skilled and unskilled workers and has also opened the landlocked hinterland by providing essential facilities such as schools, hospitals etc. for the people of the area. Thus, NJHEP envisaged the social and economic upliftment of the persons living in the vicinity of the Project i.e. of society at large.



Dam & Intakes of the 1500 MW Nathpa Jhakri Power Project

4.0 Financial Performance

The financial position of SJVNL , for the last 3 years, is as under :

Rs. In Crores

Financial Year	2004-05	2003-04	2002-03*
INCOME DETAILS			
Sales	1098.27	216.93	-
Other Income	22.72	6.60	-
Total Income	1120.99	223.53	-
Profit before Interest, Depreciation and Finance Charges	1049.09	211.61	-
Profit before tax	323.84	(93.09)	-
Profit after tax	298.42	(93.09)	-
Dividend	143.15	-	-
Reserve a surplus	43.40	(93.09)	-
SOURCES OF FUNDS			
Share Capital	4108.81	4045.51	3925.51
Reserve & Surplus	43.40	(93.09)	-
Net Worth	4152.21	3952.41	3925.51
Borrowings	3631.70	3812.30	3317.09
TOTAL	**7783.92**	**7764.71**	**7242.60**
APPLICATION OF FUNDS			
Gross fixed Assets	7980.28	6722.28	262.35
Depreciation (-)	579.26	217.80	48.56
Net Block	7401.02	6504.47	213.79
Total fixed assets (including capital work in progress, investments etc.)	7476.84	7746.02	7378.24
Net Current assets	306.73	17.40	(137.51)
Misc. expenditure	0.34	1.29	1.87
Total	**7783.92**	**7764.71**	**7242.60**

* SJVNL has started the commercial generation only in the year 2003-04.

Generation

Generation during the year 2004 – 05 has been 5209.676 MUs (including 39.033 MUs of infirm power) out of which 5147.342 MUs (including 38.566 MUs of infirm power) were injected into the Northern Grid.

Generation during the year 2005 – 06 up to November was 5209.676 MUs (including 39.033 MUs of infirm power) out of which 5147.342 MUs (including 38.566 MUs of infirm power) were injected into the Northern Grid.

The Nathpa Jhakri Power Station has generated 9801 MU of electricity since beginning and has earned a cumulative revenue of Rs. 2286 Crores up to January 08, 2006.

Corporate Plan

SJVN has drawn a comprehensive 10 year plan to achieve a target over 6650 MW by 2014 - 15 and emerge as a major contributor in Hydel Power generation. SJVN has already taken up the execution and subsequent operation and maintenance, of the following projects in the states of Himachal Pradesh and Uttaranchal :

(1) Rampur HE Project (412 MW) located on river Satluj in Shimla district of Himachal Pradesh.

(2) Luhri HE Project (700 MW) located on river Satluj in Shimla district of Himachal Pradesh.

(3) Khab HE Project (636 MW) located on river Satluj in Kinnaur district of Himachal Pradesh.

(4) Devsari Dam HE Project - 300 MW, on river Pindar, located in district Chamoli of Uttaranchal state.

(5) Naitwar Mori HE Project - 33 MW, on river Tons (a tributary of river Yamuna), located in district Uttarkashi of Uttaranchal state.

(6) Jakhol Sankri HE Project - 33 MW, on river Supin, located in district Uttarkashi of Uttaranchal state.

SJVN is also making all out efforts to take up the execution of more projects in the other states of the Country.

Organizational Status

Human Resources

The total man power on the rolls of SJVN was 780 as on 31st March 2005 as against 627 as on 31st March 2004. The strength of HPSEB/HP Govt. on deputation on the above date was 945.

Human Resources Development

SJVN believes that employees are its most valuable assets and has evolved growth oriented human resource development strategy.

Empowerment of manpower skills through training received utmost importance every time. The Company has well established strategy for imparting training to the employees and involved other professional people to

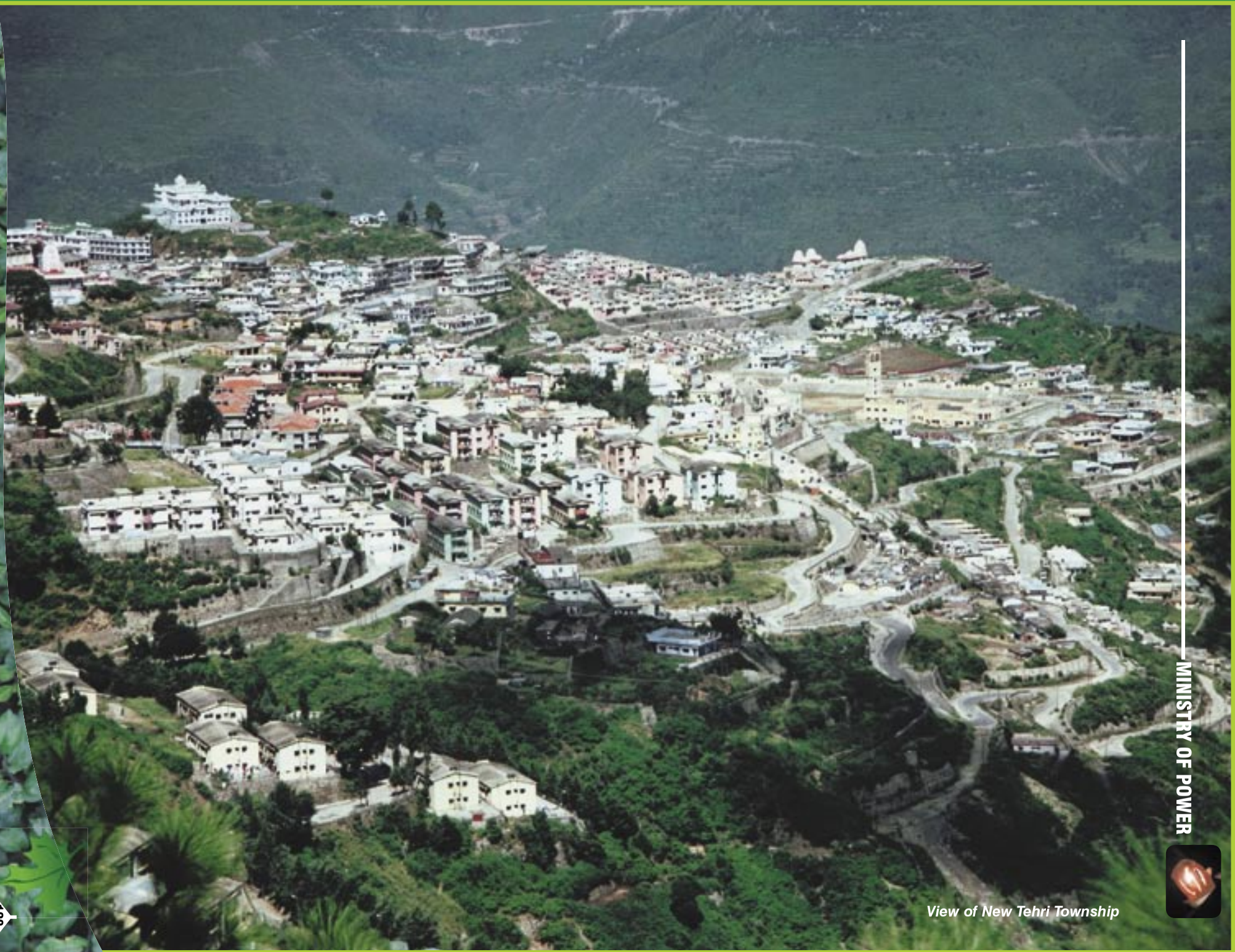
motivate the employees for good working. The training imparted is two-dimensional i.e. by giving in-house training and through external professional institutions as well. We also facilitate the professional candidates of various institutions for undergoing vocational training in this organization.

IMPLEMENTATION IN BANK ASSISTED PROJECTS IN INDIA. IT SHOULD BE CONSIDERED AS AN EXAMPLE FOR OTHER PROJECTS.'

Environment & R&R Policy

SJVN (NJPC) has adopted an environment, resettlement & rehabilitation policy which reiterates company's commitment to sustainable development which is within the carrying capacity of the eco-system and which promotes the improvement of the quality of life.

Underground Power House of the 1500 MW Nathpa Jhakri Power Project



View of New Tehri Township

Chapter - 23.8

TEHRI HYDRO DEVELOPMENT CORPORATION LTD.

Tehri Hydro Development Corporation Ltd. (THDC), a Joint Venture Corporation of the Govt. of India and Govt. of U.P., was incorporated as a Limited Company under the Companies Act, 1956, in July'88, to develop, operate and maintain the Tehri Hydro Power Complex and other Hydro Projects.

THDC is presently responsible for the implementation of the Tehri Hydro Power Complex (2400 MW), Vishnugad Pipalkoti (440 MW) and sis other new Hydro Electric Projects, totaling to an installed capacity of 695 MW.

The Corporation has an authorized share capital of Rs. 4000 Cr. The cost of the Project is being shared in the ratio of 75:25 (equity portion) by Govt. of India & Govt. of U.P. for Power Component, while Irrigation Component (20% of Stage-I cost) is to be entirely funded by the Govt. of U.P.

Tehri Hydro Power Complex (2400 MW), comprises the following components:

Tehri Dam & Hydro Power Plant (1000MW)

Koteshwar Hydro Electric Project (400 MW)

Tehri Pumped Storage Plant (1000 MW)

The Govt. in March, 1994 approved the implementation of Tehri Dam & HPP (1000 MW) as Stage-I of Tehri Power Complex. The Tehri Stage-I Project is currently at an advanced stage of commissioning. The 400 MW Koteshwar HEP, was approved by Govt. in April, 2000 and the work is in progress. PIB clearance has been accorded to Tehri PSP. The project is being processed for investment decision.

MOU for Vishnu Gad Pipalkoti Project on Alaknanda river, was signed between THDC and Government of Uttaranchal for implementation of project in April-2003. The Feasibility Report has been completed envisaging an installed capacity of 440 MW and CEA has conveyed the commercial Viability of the Project. The preparation of DPR of project and Stage-II infrastructural activities are under progress.

Government of Uttaranchal (GOU) has allotted six new Hydro Electric Projects to THDC, totaling to an installed capacity of 695 MW, in Uttaranchal State. Implementation agreement for these projects have been signed by THDC with GOU in Nov-05 and Survey & Investigation works for preparation of Feasibility Report has been taken up.

BENEFITS FROM TEHRI HYDRO POWER COMPLEX:

The benefits from the Tehri Hydro Power Complex are as under:

- Addition to the installed generating capacity in the northern Region : 2400 MW
- Annual energy availability (Peaking) : 6200 MU
- Irrigation (additional) : 2.70 Lac, ha.
- Stabilisation of existing irrigation : 6.04 Lac. Ha.
- 300 Cusecs (162 million gallons per day) of drinking water for Delhi which will meet the requirements of about 40 Lac. People.
- In addition, 200 Cusecs (108 million gallons per day) of drinking water for towns and villages of U.P. which will meet the requirement of 30 Lac. People.
- Integrated development of Garhwal region, including construction of a new hill station town with provision of all civic facilities; improved communication, education, health, tourism, development of horticulture, fisheries, and afforestation of the region.

1. Tehri Dam & HPP, Stage-I (1000 MW):

Tehri Dam project is a multipurpose Hydro Project under construction on the river Bhagirathi in Uttaranchal State. Tehri Hydro Power Plant (Stage-I) includes the construction of the 260.5 m high rock fill Dam, Spillway structures, power tunnels and an underground power house cavern with an installed capacity of 1000 MW (4x250 MW).

STATUS OF THE PROJECT WORKS:

The work of Tehri Stage-I Project is nearing completion. The reservoir impoundment has already started. The Present status of the project works is as under:

A. Main Dam:

The 260.5 m high Tehri Dam, which is the highest earth & rock fill dam in Asian region, has been raised to its full height up to level of El. 839.5 m. A mammoth quantity of 278.16 Lac Cum of fill material has been placed to complete the Tehri Dam.

View of Tehri Dam from Chute spill way

B. Spillways:

The Spillway arrangement consists of one Gated Chute Spillway on right bank, 2 nos ungated Shaft Spillways on Right Bank, (Shaft T-3 & T-4), 2 nos. gated Shaft Spillways on Left Bank (Shaft T-1 & T-2) and an Intermediate Level Outlet (ILO).

The work of Chute Spillway and Stilling Basin has been completed. A total quantity of 8.67 Lac Cum concrete has been placed in these structures. ILO and T-3 circuit has been completed and water is flowing through the circuit. The work fo T-4 circuit is in advance stage of completion.

In Shaft T-1,concrete lining from El. 668.50 to 815.0 M and in Shaft T-2, concrete lining from EL 677.0 M to EL 815.0 M has been completed till date and balance works of Left Bank Shaft Spillways are under progress.

Concreting of 1st stage plug of Tunnel T-2 has been completed and works of 2nd stage plug are in progress.

Closure of Tunnel-T-2:

With the closure of Diversion Tunnel T-2 on 29th Oct-05, reservoir impoundment has started.

C. Power House Complex:

i. Civil Works

All the civil works of Power House Complex have been successfully completed.

The work of Maintenance Gate Shaft No. 4 and its transition with HRT-4 which had become critical due to very complex geology has been successfully completed by improvised construction methodology and massive grouting.

The river joining works of TRT-1 & TRT-2 which were taken-up after closure of diversion tunnel T-2 are nearing completion.

ii. Electro-Mechanical Equipment:

The boxing up of Unit-IV, III and II has been completed. Boxing of Unit-1 is in advance stage of completion.

Erection of all 4 Nos Transformers (306 MVA each), 400 KVA Gas Insulated Switchgear and Gas Insulated Busduct have also been completed. The various auxiliaries system including Governor Control Systems in the Power House have been completed and pre-commissioning of units is in progress. The Power House Control Room with

fully Computerized Control System having state of art technology has made ready for the commissioning of the project.

PROJECT COMMISSIONING:

The Project is scheduled for commissioning from March 2006.

REVISED COST ESTIMATE:

The Revised Cost Estimate of Tehri Dam & HPP Stage-I (1000 MW) including essential works of Tehri PSP amounting to Rs. 6621.32 Crs including IDC & FC of Rs. 560.00 Crs. at March '03 PL was sanctioned by CCEA in Nov.'04, with project Commissioning by July '05. Considering the revised commissioning schedule of March'06, completion cost of the Project has been worked out tentatively to Rs. 7944.32 Crs. including IDC of Rs. 1154.48 Crs.

EXPENDITURE:

Total expenditure incurred upto December '05 on Tehri Stage-I Project is Rs. 7451.80 Cr. Including IDC & FC Rs. 981.22 Cr.

REHABILITATION:

- The rehabilitation work of the project affected families was commenced by the Govt. of Uttar Pradesh when the project was under them.
- After the incorporation of Tehri Hydro Development Corporation (THDC) the rehabilitation work was handed over to the THDC in 1990. The policy as evolved by the State Govt. was fully adopted by THDC.
- Improvements/Upgradation of compensations were subsequently carried out from time to time mainly to account for escalations.
- A substantial package of additional measures was introduced effective from 01.09.1995.
- Further improvements in R&R Policy and Package were carried out in Dec. '98, based on decisions of the Govt. on the Recommendations of Hanumantha Rao Committee (HRC).
- As per Govt. decision R&R works were transferred to the U.P. State Govt. in Jan. '99 for implementation, under control and supervision of commissioner, Garhwal, with funds to be provided by THDC. With the formation of Uttaranchal State, R&R is now being implemented by Uttaranchal State Govt.

STATUS OF REHABILITATION:

Due to construction of the Tehri Dam, the Old Tehri Town and 37 villages are getting fully affected and another 72 villages will only be partially affected.

Tehri underground Power house

a. Urban Displaced Families: All the 5291 Urban families of Old Tehri Town have been rehabilitated and Old Tehri Town vacated.

b. Rural Displaced Families: All the Project affected families (PAFs) residing upto El. 760 m have already been rehabilitated. The balance families are being rehabilitated pari-passu with the reservoir filling.

ENVIRONMENT:

All the required studies have been completed and their reports submitted to the Ministry of Environment & Forests (MOEF). These studies indicated that no environmental damage would be caused by the construction of the project, which cannot be remedied by adoption of appropriate measures. For this purpose, Action Plans, wherever called for, have been/are being implemented for environmental upgradation.

Catchment Area Treatment in the high and very high erodibility classification in entire area of 52,204 ha has been completed. The compensatory afforestation in an area of 4516 ha. has already been done in districts of Jhansi and Lalitpur in U.P. The plantation done on non-forest land is being converted into protected forest by State Forest deptt.

A Botanical Garden located adjacent to the Reservoir in an area of 14.28 ha at Koti in Tehri Garhwal has been set up at project cost. The work of Maheseer Fish hatchery for induced artificial breeding has been also been completed.

2. KOTESHWAR HYDRO ELECTRIC PROJECT (400 MW):

The Koteshwar Hydro Electric Project is an integral part of the 2400 MW Tehri Hydro Power Complex. Koteshwar Project comprises a 97.5 m high concrete Dam and Surface Power House, housing 4 units of 100 MW each and is located around 22 Km. downstream of Tehri Dam. Koteshwar Project is a run-off-river scheme with minimum diurnal storage. The Koteshwar Project will regulate water releases from Tehri Reservoir for irrigation purposes.

The Govt. of India has approved the execution of Koteshwar

A view of part of old Tehri Town and lake reservoir

H.E Project (4x100 MW), at a cost of Rs. 1301.56 cr. including IDC of Rs. 190.04 cr at Oct.'99 price level with debt equity ratio of 3:1.

STATUS OF PROJECT WORKS:

a. Civil Works:

- The Diversion Tunnel has been constructed and Bhagirathi River diverted.
- The main civil works package has been awarded and works are in progress.
- The Excavation for Dam, Spillways and Surface Power House is in progress. Out of total Open Excavation of 60.37 Lac. Cum., a quantity of 52.82 Lac. Cum. has been executed for Dam, Spillways and Power Intakes. The underground excavation in Drainage Galleries and Penstocks is also in progress.

b. Electro-Mechanical Works:

- The Electro-Mechanical Equipment package (including design, manufacturing and supply of E&M equipments for main generating unit with EOT Crane etc.) have been awarded to M/s BHEL. The items/equipments are being supplied progressively by M/s BHEL.

c. Rehabilitation and Land Acquisition:

Due to construction of Koteshwar Project, 2 villages will come under submergence and 14 villages will be partially affected. There are 103 fully affected families which are to be rehabilitated. Another 280 families are partially affected for which only cash compensation will be paid. Rehabilitation Package evolved for Tehri Stage-I is applicable for rehabilitating the families affected by Koteshwar HEP.

All the entitled families of 2 villages under fully submergence Pendars and Mulani Villages have been allotted residential and agricultural plots. Also affected families of Sauntiyal village have been paid compensation/allotted residential and agricultural plots. The village Pendars has been evacuted completely and the village Mulani also evacuated except two houses.

COMMISSIONING SCHEDULE:

The Project is scheduled to be commissioned in March, 2008.

EXPENDITURE:

Total expenditure incurred on Koteshwar HEP (400 MW) upto Dec-2005 is Rs. 315.57 Crs.

3. TEHRI PUMPED STORAGE PLANT (PSP) 1000 MW:

The Pump Storage Plant envisages 4 reversible units of 250 MW each. An important feature of the Project is the large variation of about 90 m between the maximum and minimum head, under which the reversible units shall operate.

Essential works of Tehri PSP have been completed alongwith the execution of Tehri stage-I works. Head Race Tunnels, Intakes for PSP have already been completed. The Transformer Hall under Tehri Stage-I have been constructed to accommodate the Generator Transformers for PSP. The main cable gallery, interface facility for power evacuation have also been completed. Major Civil Works to be taken up in PSP involve only the Machine Hall and Tail Race Tunnels Penstocks and Surge Tanks.

Annual generation from the Project would be 1377 MU. For pumping operation of reversible units during off-peak hours, the energy requirement will be of the order of 1712 MU. With the construction of Tehri PSP, Tehri Hydro Power Complex shall function as a major peaking station having an installed capacity of 2400 MW.

The Detailed Project Report (DPR) of the Tehri PSP (1000 MW.) has been updated by M/s Edf and M/s CoB, French consultants. Based on the updated DPR, CEA has cleared the revised Cost Estimate for Rs. 1745.40 Crs. at jan-05 Price Level. The proposal for implementation of Tehri PSP has been recommended by Public Investment Board (PIB) and is being processed for investment sanction. The project is scheduled for commissioning in 4 years after investment approval.

4. VISHNUGAD PIPALKOTI (440 MW):

The Vishnugad-Pipalkoti Hydro Electric Project (4x110 MW) is envisaged on river Alaknanda, a major tributary of Ganga in Chamoli District of Uttaranchal.

THDC and Government of Uttarnchal have signed MOU for implementation of Vishnu Gad Pipalkoti Project on Alaknanda river. The Feasibility Report has been completed envisaging an installed capacity of 440 MW (4x110 MW) and CEA has conveyed the Commercial Viability of the Project. The proposal for cost estimate of Stage-II activities has been recommended by Committee of Public Investment Board (CPIB) has been sanctioned Govt. of India. Preparation of Detailed Project Report (DPR) and Stage-II infrastural works of the project are in progress.

5. NEW PROJECTS:

Government of Uttaranchal (GOU) has allotted the following six new Hydro Electric Projects totaling to an installed capacity of 695 MW, to THDC.

S.N.	Name of Projects	Capacity	River
1.	Karmoli	140 MW	Jadhganga
2.	Jadhganga	50 MW	Jadhganga
3.	Gohana Tal	50 MW	Birahiganga
4.	Malari Jhelam	55 MW	Dhauliganga
5.	Jhelam Tamak	60 MW	Dhauliganga
6.	Bokang Bailing	330 MW	Dhauliganga(K)

Implementation agreement for these projects have been signed by THDC with GOU in Nov-05. MOEF has accorded Stage-I environmental clearance for five projects except Bokang Bailing Project as the proposed Project site is coming under Askot Musk Deer Sanctuary. CEA has recommended Cost Estimates for Stage-I activities of all the six projects. Survey & Investigation works for preparation of Feasibility Report have been taken up.

HUMAN RESOURCE MANAGEMENT

The Corporation has always endeavored for utilizing the human resource most effectively. As the corporation is heading towards achieving the commissioning of the project, the most important task for entering into operation & maintenance phase of the project has been the focus of re-engineering the human resource. As a step towards enhancing organization effectiveness, Indian Institute of Management (IIM) Ahmedabad has been engaged for providing consultancy for “Organisational Diagnosis Exercise and Effective Human Resource Management System”.

Apart from assessing the strategic HR orientation, the study will bring about identifying attitudes, values, belief and the work culture. This will lead to developing the Organizational frame work.

Under the HR initiatives, various Personnel Policies were updated/reviewed. The Corporation actively participated in the HR Meets organized by Power HR Forum, an Association of Central Power Sector Undertakings.

Chapter - 23.9

DAMODAR VALLEY CORPORATION

INTRODUCTION

Damodar Valley Corporation (DVC) was constituted by an Act of Central Legislature on 7th July, 1948 for the Unified Development of Damodar Valley with the objectives of promotion and operation of schemes for generation, transmission and distribution of electrical energy, both hydro-electric and thermal besides other non-power functions viz. Irrigation, Flood control and Water supply, Afforestation and Soil conservation and Socio economic development of inhabitants within its area of operation.

Keeping in view of the growing domestic demands and also to meet the national priorities, power generation with associated transmission and bulk distribution activities gained momentum in DVC. Other objectives of DVC, have also received due attention in execution as part of its overall responsibility.

POWER RELATED ACTIVITIES OF DVC

A. POWER GENERATING PLANTS AT A GLANCE

Station	Location	Existing Capacity	Commissioned
THERMAL POWER STATIONS (TPS)			
Bokaro 'A' TPS	Dist. Bokaro Jharkhand	135 MW (3x45)	1953
Bokaro 'B' TPS	Dist. Bokaro Jharkhand	630 MW (3x210)	1986-1993
Chandrapura TPS	Dist. Bokaro Jharkhand	750 MW (3x130+3x120)	1964-1979
Durgapur TPS	Dist. Burdwan West Bengal	350 MW (1x140+1x210)	1966-1982
Mejia TPS	Dist. Bankura West Bengal	840 MW (4x210)	1996-2005
Total Thermal		**2705 MW**	
HYDEL POWER STATIONS (HPS)			
Tilaiya HPS	Dist. H'bagh Jharkhand	4MW (2x2)	1953
Maithon HPS	Dist. Burdwan West Bengal	60 MW (3x20)	1957-1958
Panchet HPS	Dist. Dhanbad Jharkhand	80 MW (2x40)	1959-1991
Total Hydel		**144 MW**	
GAS TURBINE STATION (GTS)			
Maithon GTS	Dist. Dhanbad Jharkhand	82.5 MW (3x27.5)	1989
GRAND TOTAL		**2931. 5 MW**	

B. TRANSMISSION & DISTRIBUTION LINES AT A GLANCE

Particulars	220 KV	132KV	33 KV
Transmission Line (Ckt. Km.)	1079	2642	
Interconnection Tie Line (Ckt. Km.)	198	395	
Distribution Line (Ckt. Km.)	18	252	1057
Total.(Ckt. Km.)	1295	3289	1057

C. SUB STATIONS & RECEIVING STATIONS AT A GLANCE

Particulars	220 KV	132KV	33 KV
Sub Station (Nos.)	9	34	
Receiving Station (Nos.)			15
Total (Nos.)	9	34	15

D. OPERATING PERFORMANCE & TARGETS - POWER

Particulars	Operating Parameters 2004-05 (upto Nov'04)	2005-06 (upto Nov'05)	Target (Dec'05 to Mar'06)
A. PHYSICAL DATA			
1. Generation (MU)			
(i) Thermal	6533	7757	4473
(ii) Hydel	215	140	45
(iii) Gas Turbine	0	0	0
TOTAL	**6748**	**7897**	**4518**
2. Thermal PLF (%)	*55.78	*59.94	*69.70
3. Purchase of Power (MU) (at DVC Bus)	970	590	520
4. Total Stock (MU) (at DVC Bus)	6800	7495	4470
5. Saleable Units (MU) (at DVC Bus)	6627	7250	4330
B. FINANCIAL DATA (Rs. in crores)			
(Provisional)			
1. Sale of Power	1857	2089	1336
2. Profit before Tax - Power	450	598	356
3. Deficit in Irrigation & Flood Control	(39)	(40)	(15)
4. Net Profit	411	558	341
5. Income Tax	68	129	59
6. Profit after Tax	343	429	**282

* Excluding non-running units at BTPS 'A' (3x45 MW) and CTPS (3x120MW).
**Profit after tax is excluding extra ordinary Income/expenditure and Past year's Adjustment. Note: Past year's financial figures recasted after giving effect of annual adjustment but excluding the effects of securitization scheme.

Vocational Training Programme under social integration Programme of DVC

Check Dam Constructed by DVC Under Soil Conservation Programme.

E. RENOVATION & MODERNISATION PROGRAMME

Residual Life Assessment (RLA) based comprehensive Renovation & Modernisation (R&M) with Life Extension (LE) programme has been undertaken for 10 (ten) old thermal generating units (BTPS 'A' - 3 Units; CTPS - 6 Units & DTPS - 1 Unit) of vintages ranging from 52 to 26 years. In addition, R&M/LE including capacity uprating for 4 (four) hydel units of 52 to 48 years old have also been taken up.

F. CAPACITY ADDITION PROGRAMME

(i) 10th Plan Projects

Project	Capacity (MW)	Brief Status as on Nov'05	Target Commercial Operation
Mejia TPS Extn. Unit # 4	1x210	Commissioned on 16.10.04 and under commercial operation since 13.02.05	
Mejia TPS Extn. Unit # 5&6	2x250	Construction under progress. Boiler Drum lifting of U #5 completed on 30.1 1 .05.	Unit #5: 12.01.07 Unit #6: 12.03.07
Chandrapura TPS Extn. Unit # 7&8	2x250	Construction under progress.	Unit #7: 27.01.07 Unit #8: 27.03.07
	Total	**1210**	

(ii) 11th Plan Projects

Project	Capacity (MW)	Brief Status/ Plan	Target Completion
Category - 1 (By DVC)			
Durgapur Steel TPS	2x500	DPR: Ready NIT: Dec'05 LOA: Jul'06	Unit #1: 2009-10 Unit #2: 2010-11
Kodarma TPS	2x500	DPR: Ready NIT: May'06 LOA: Dec'06	Unit #1: 201 0-11 Unit #2: 201 0-11
Total Category-1	2000		
Category - II (Through JV route)			
Maithon Right Bank TPS (By MPL, JV with TPL)	2x500	NIT: Mar'06 LOA: Sept'06	Unit #1: 2009-10 Unit #2: 2010-11
Bokaro Steel TPS (By BPSCL, JV with SAIL)	2x250	DPR: Jan'06 NIT: Nov'06 LOA: Jun'07	Unit #1: 2009-10 Unit #2: 2009-10
Panchet Hill IPS* (By New JV thro' EOI route)	2x500	DPR: Jun'06 NIT: Mar'07 LOA: Dec'07	Unit #1: 2010-11 Unit #2: 2011-12
Ramgarh TPS (By New JV thro' EOI route)	2x500	DPR: Mar'06 NIT: Dec'06 LOA: Sep'07	Unit #1: 2010-11 Unit #2: 2011-12
Total category-II	3500		
Total Category-I+II	5500		

RURAL ELECTRIFICATION BY DVC UNDER RGGVY OF MOP, GOI

WEST BENGAL:

Allocated District: East Medinipur No. of Mouzas: 807

Description	Phase - 1	Phase - II & III
Coverage	224 mouzas	583 mouzas
11KV Line (3 phase)	371.00CKm	1215.20 CKm
LT Line (3 phase 4 Wire)	213.00CKm	583.00 CKm
11/0.4KV Distribution Transformer	307 Nos.	759 Nos.
Service connection to BPL households	2270 Nos.	16074 Nos.
Total households (including BPL)	18344 Nos.	
Expected completion date	31.03.06	31.03.07

- Work status: Activity taken up in 105 mouzas out of which 29 mouzas completed in all respect and pole erection completed in 63. Work in progress in balance 13 mouzas. Note: All materials commensurate with erection targets are either available at site or in the pipe line of despatch followed by inspection.

Panchet Dam of Damodar Valley Corporation

A panoramic view of Mejia Thermal Power Station of DVC situated at Bankura District of West Bengal

JHARKHAND:

Allocated Dist: Dhanbad, Bokaro, Giridih, Hazaribagh, Koderma, Chatra, Gumla & Simdega. No. of Mouzas: 4746

Status as on 30.12.05:

- Input data for preparation of DPR for Dhanbad and Kodarrna districts has been collected based on actual field survey deploying departmental manpower. Collection of data in respect of Hazaribagh district is expected to be completed departmentally by January'06.
- Complete DPR for Dhanbad district is expected to be submitted to JSEB by end January'06.

ENERGY CONSERVATION PROGRAMME

DVC has been making continuous efforts to induct efficient and modern practices in Energy Management System to increase the availability of power with lower Oil, Coal, Water and Aux. Power consumption.

NON-POWER ACTIVITIES OF DVC

FLOOD CONTROL

Out of the originally planned eight storage reservoirs in Damodar basin, construction of four multi-purpose Dams at Maithon, Panchet, Tilaiya and Konar have been completed in the first stage.

IRRIGATION

Management and operation of Irrigation infrastructure developed by DVC in the lower valley has been handed over to the Govt. of West Bengal in 1964 on agency basis and DVC provides water from its reservoirs, as per the demand, for Rabi, Kharif as well as Boro cultivation in the lower valley.

INDUSTRIAL & MUNICIPAL WATER SUPPLY

Many Industries have come up in the Damodar Valley in last few decades because of availability of power and water in the region. Uptil now DVC provides water to around 131 industries from its reservoirs. In addition, water is drawn by different Municipalities from the system. From the inception till date the demand for water in the valley has grown up considerably. Present actual quantity of water drawn by different agencies is around 279 46 MGD.

COMPREHENSIVE SYSTEM STUDY OF DAMODAR - BARAKAR BASIN

At the initiative of Damodar Valley Corporation, a core Group comprising representative of CWC, DVC and Govt. of Jharkhand has been formed by CWC to undertake a fresh comprehensive system study of Damodar-Barakar basin aiming tharnessing the remaining hydro potential and unified development of the basin.

BALPHARI PROJECT

As part of the implementation of unified Development of Damodar Valley in the 2nd stage, DVC has proposed to construct one storage dam on the river Barakar at Balpahari in the State of Jharkhand between Tilaiya and Maithon dams. The reservoir will have flood storage capacity of 2.16 Lakh ac-ft with conservation capacity of 2.10 Lakhs ac-ft. The project when implemented will create potential for irrigation of 42,000 acres and 100 cusec (54 MGD) water supply to industries and Municipalities in the state of Jharkhand. The project also envisages one conventional hydroelectric unit of capacity 20 MW. The job of survey and investigation followed by preparation of the Pre-Feasibility report (PFR) has been entrusted to CWC, New Delhi

KONAR HYDROELECTRIC PROJECT

Konar Dam was commissioned in 1954 for industrial water supply (600 ac-ft/day) with penstock opening provided in the dam body for installation of hydro-electric unit. NHPC, Consultant of DVC recommended for one conventional unit of capacity 3 MW in consideration of the distressed condition of the Dam. Further, needful action towards final project report is being taken by DVC.

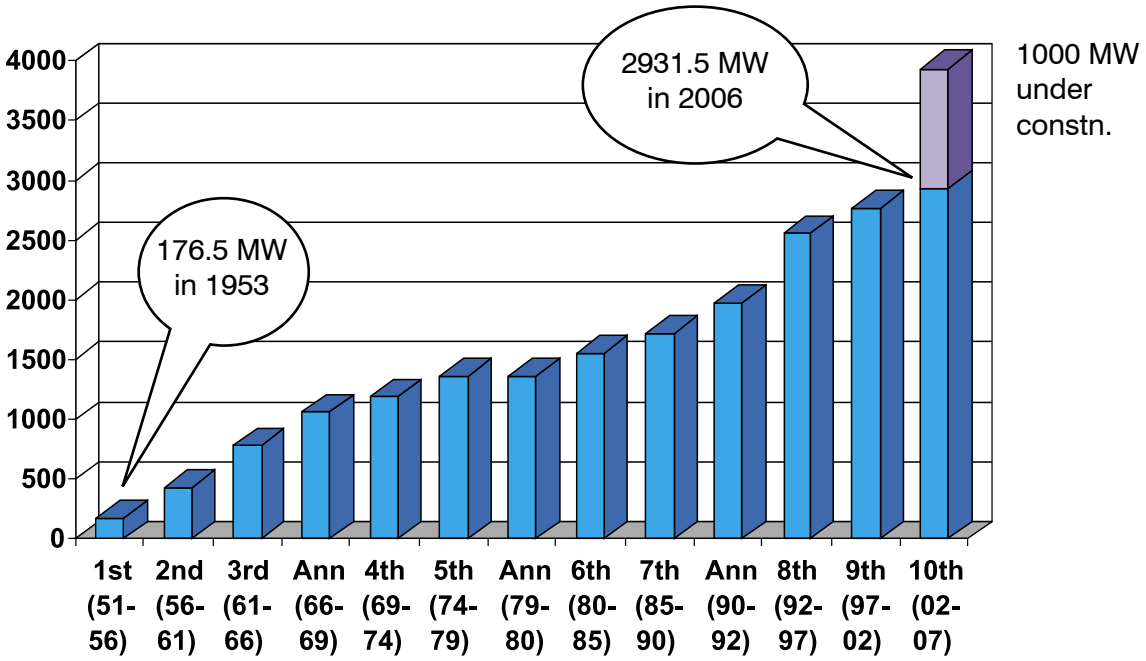
AFFORESTATION & SOIL CONSERVATION

DVC started soil conservation works in the valley from 1949.

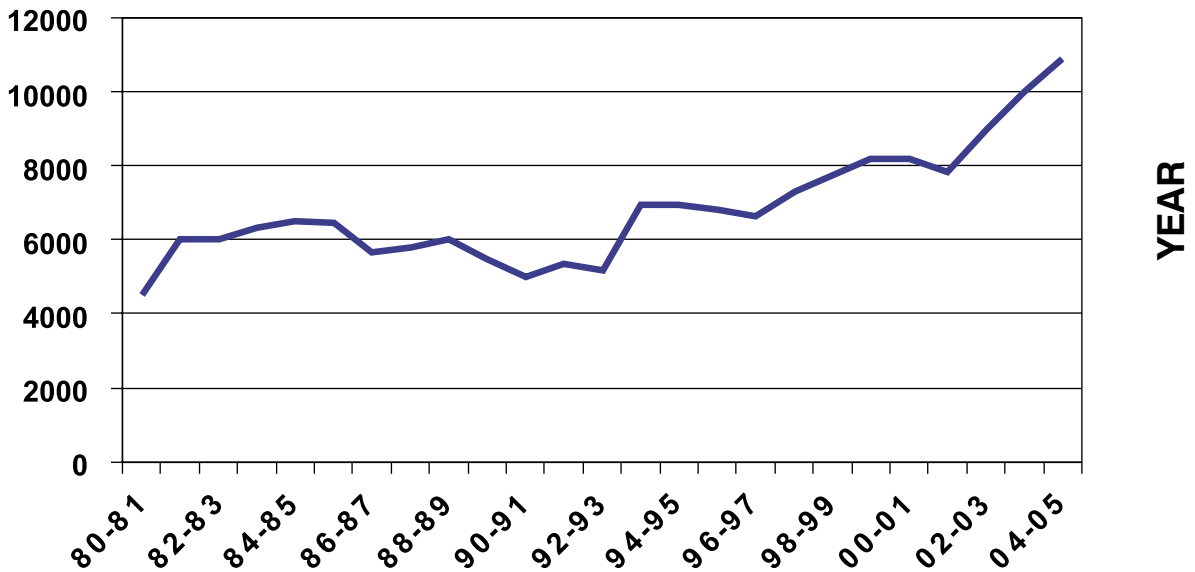
The Soil Conservation work of DVC is spread over in the upper valiey comprising of the districts of Palamu, Ranchi, Hazaribagh, Giridih, Kodarma, Bokaro, Chatra, Jamtara and Dhanbad in the State of Jharkhand.

The nature of soil conservation works which are being taken up are classified as (i) Afforestation; (ii) Upland treatment, and (iii) Wasteland treatment.

GROWTH - DVC INSTALLED CAPACITY (MW)



GROWTH - ENERGY GENERATION (MU) BY DVC



Chapter - 23.10

BHAKRA BEAS MANAGEMENT BOARD

Bhakra Management Board (BMB) was constituted under Section 79 of the Punjab Re-Organisation Act, 1966 for the administration, maintenance and operation of Bhakra Nangal Project with effect from Ist October, 1967. The Beas Project Works, on completion, were transferred by the Government of India from Beas Construction Board (BCB) to BMB as per Section 80 of the Act and Bhakra Management Board was renamed as Bhakra Beas Management Board (BBMB) with effect from 15.5.1976.

FUNCTIONS

Bhakra Beas Management Board is responsible for the administration, operation and maintenance of Bhakra Nangal Project, Beas Satluj Link Project and Pong Dam including Power Houses and a network of transmission lines and grid sub-stations. The functions of Bhakra Beas Management Board are:

- To regulate the supply of waters from Bhakra- Nangal and Beas projects to the states of Punjab, Haryana and Rajasthan.
- To regulate supply of Power generated at the Bhakra-Beas Power Houses to power utilities incharge of distribution of power in the participating States

Keeping in view the technical expertise available with BBMB, the Government of India through a notification in April, 1999 has also entrusted additional functions to Bhakra Beas Management Board of providing and performing Engineering and related technical and consultancy services in various fields of Hydro Electric Power and Irrigation Projects and to carry on all kind of business related thereto either independently or as a joint venture with any Central/ State/Public Sector Undertaking(s) or Establishment(s) under the administrative Control of Ministry of Power or as a joint venture with any other agency/Organization with the approval of Government of India.

The works being managed by BBMB are broadly grouped as three large multipurpose projects viz. Bhakra Nangal Project, Beas Project Unit-I (BSL Project) and Beas Project Unit-II (Pong Dam).

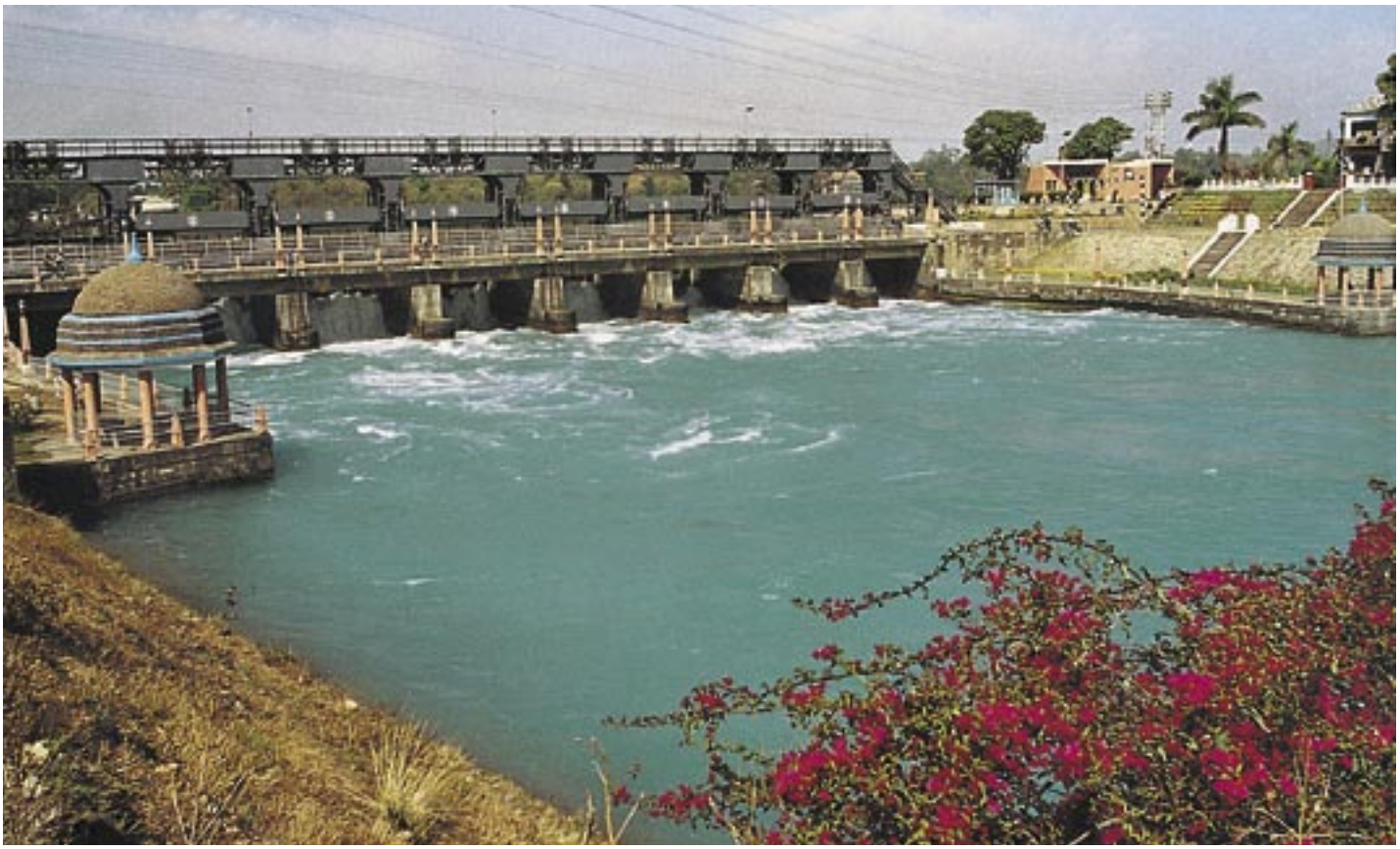
The Bhakra Nangal project comprises the Bhakra Dam, Bhakra Left Bank and Bhakra Right Bank Power Houses, Nangal Dam, Nangal Hydel Channel and Ganguwal, Kotla Power Houses and associated transmission system. Bhakra Dam is a majestic monument across the river Satluj. It is a high straight gravity concrete Dam rising 225.55 metres above the deepest foundation and spanning the gorge with 518.16 metres length at the top. The Gobind Sagar Lake created by the Dam has 168.35 square kilometres area and a gross storage capacity of 9621 million cubic metres. The two power houses, one on the Left Bank and the other on the Right Bank have a combined installed capacity of 1325 mega watt. The Ganguwal and Kotla Power Houses fed from Nangal Hydel Channel have an installed capacity of 155.30 mega watt. The Beas Project Unit – I (BSL Project) diverts Beas Water into the Satluj Basin, falling from a height of 320 metres and generating power at Dehar Power House having an installed capacity of 990 mega watt. This project comprises a diversion dam at Pandoh, 13.1 kilometres long Pandoh Baggi Tunnel, 11.8 kilometres long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 kilometres long Sundernagar Satluj Tunnel, 125 metres High Surge Shaft and Dehar Power Plant. The Beas Dam at Pong is earth-fill (earth core, gravel shell) Dam 132.6 metres high with a gross storage capacity of 8570 million cubic metres. The Pong Power Plant (6x66 = 396 mega watt) is located in the stilling basin downstream of penstock tunnels.

The total installed generating capacity of the BBMB Power Houses is 2866.30 Mega Watt as detailed under :-

Power House	Installed Capacity	Mega Watt
Bhakra (Right Bank)	5x157	785
Bhakra (Left Bank)	5x108	540
Ganguwal	1x29.25+2x24.20	77.65
Kotla	1x29.25+2x24.20	77.65
Dehar	6x165	990
Pong	6x66	396
	Total	**2866.30**

GENERATION AND TRANSMISSION SYSTEM

The generation during 2004-05 was 8596 Million Units against the target of 10050 Million Units. The reason for lower generation during the year 2004-05 was due to



Nangal Hydel Channel

extremely low inflows at the hydro stations due to failure of rains and less snowfall in the catchment area. During the current year 2005-06, the generation from the BBMB Power Houses has been 9566 Million Units up to 30.12.2005 against the target of 8853 Million Units. Generation of 11535 Million Units has been anticipated up to 31st March,2006 against the annual target of 10802 million units fixed by Central Electricity Authority, Government of India. The Plant availability of BBMB Power Stations during 2005-06 (up to December 2005) has been 92.18%. The Power generation at BBMB Power houses is being evacuated through BBMB Power evacuation system running into 3735 circuit kilo metres length of 400 Kilo Volts, 220 Kilo Volts, 132 Kilo Volts and 66 Kilo Volts transmission lines and 24 Extra High Voltage Sub-stations. The Bhakra Beas Management Board Power evacuation system operates in an integrated manner in the Northern Grid with its transmission network spreading over the States of Himachal Pradesh, Punjab, Haryana and Delhi. The system is interconnected with transmission system of POWERGRID and the States of Uttar Pradesh, Rajasthan and Delhi. The availability of transmission system during the year 2005-06 (up to December 2005) has been 98.20%.

IRRIGATION

At the time of partition of India, about 80% of the irrigated area of Punjab went to West Pakistan leaving India with very meagre irrigation resources. The mighty Bhakra- Nangal and Beas Projects changed the scenario and turned Northern India into Granary of the Nation. The Bhakra Nangal and Beas Projects have not only brought Green Revolution in the States of Punjab, Haryana and Rajasthan, but also White Revolution by way of record production of milk. The North Western region of the Nation has turned into Granary of the Nation. The States of Punjab, Haryana and Rajasthan are being supplied on an average about 28 millon acre feet of water per year which irrigates one crore 25 lac acres of land.

RENOVATION, MODERNISATION AND UPRATING (RM&U)

All the five units of Bhakra Right Bank Power Houses, which were commissioned during the year 1966 to 1968, have been uprated from original capacity of 120 mega watt to 157 mega watt each.

The Renovation, Modernization and Upgradation of two

units each at Ganguwal and Kotla Power Houses has already been completed. Renovation, Modernization and Upgradation of all the six units of 60 mega watt to 66 mega watt of Pong Power House has already been completed which has resulted in additional capacity of 36 mega watt increasing the installed capacity from 360 mega watt to 396 mega watt.

BBMB plans to undertake the Renovation, Modernization and Upgradation works of Bhakra Left Bank Power House machines (5x108 mega watt) which have been in operation for the last about 40 years. All the five units are proposed to be uprated from 108 mega watt to 126 mega watt each. The Renovation, Modernization and Upgradation of Bhakra Left Bank Power House is expected to provide additional capacity of 90 mega watt to the system and is expected to generate additional 88 million units annually due to improved efficiency. This work shall be carried out in XI plan.

One unit each of Ganguwal and Kotla Power Houses which were supplied by M/S Hitachi, Japan, have been planned for Renovation, Modernization and Upgradation. With the proposed Renovation, Modernization and Upgradation of one machine each at Ganguwal and Kotla Power Houses, the derated capacity of the machines shall be uprated by 4.44 mega watt and will also result in additional annual generation of 36 million units. During renovation, replacement of major components like runner, governor, stator, unit transformer and other associated equipment is envisaged. The work on this scheme has already been undertaken and is expected to be completed in the year 2006-07.

The Renovation, Modernization and Upgradation work on the old Power Houses has given new lease of life to the machines and is a significant step towards meeting the aspirations of the Nation for adding low cost peaking power to the system through Renovation, Modernization & Uprating of old power houses as per the National Hydro Policy.

UPKEEP OF DAMS AND HYDEL CHANNELS

The upkeep of Dams and Hydel Channels by Bhakra Beas Management Board has been of high standards, which are considered the benchmarks for other hydro projects in the region. Monitoring of the health and behaviour of dams with the help of instruments installed in and around

Dehar Power Plant

the body of the dams shows the normal behaviour. Underwater inspections of Dams also do not indicate any abnormality.

Nangal Hydel Channel is running continuously since its year of commissioning i.e. 1954. Inspection, repair and maintenance of Nangal Hydel Channel are being carried out online without any closure. Sand grouting of lining is done regularly and underwater repairs are done with the help of divers. This has not only helped in maintaining an uninterrupted supply of water to the Partner States but has also helped in continuous operation of Ganguwal and Kotla powerhouses for the last 51 years.

ENVIRONMENT MANAGEMENT PLAN

PLANTATION PROGRAMME

Under this programme, BBMB had chalked out a programme to plant almost 40,000 trees and shrubs on vacant land at all Project Stations every year. During 2005-06, against a target of 40,000 trees and shrubs, BBMB has planted 64907 plants during the monsoon months of 2005. Some more plants will be planted if winter rains are normal during January & February of 2006. At Talwara, a Green Land Project has been started on 40 acre plot in which different varieties of plants are being grown in a phased manner. Another prestigious project i.e. Rock Garden at Talwara on the pattern of Chandigarh Rock Garden on 20 acre plot was started last year. The Rock Garden constructed under the aegis of Padamshree Sh. Nek Chand has been commissioned this year. The Rock Garden has been constructed with the waste and unused material from the Beas Project.

Environment Management Plan for Beas Satluj Link Project

The Environment Management Plan (EMP) proposed for BSL Project by National Enviornmental Engineering Research Institute (NEERI), Nagpur had following two components:

i) Short-Term measures: These were the mitigation measures for the benefit of the general public like organized promotion of fish production in Suketi khad and its tributaries, one-time farm management in silt affected agriculture-land, tarring of road along one side of Sundernagar Hydel Channel, improvement of cross-over bridges on Suketi khad, plantation at Baggi Control Works (BCW) and along Sundernagar Hydel Channel, provision of cattle-troughs along Suketi khad, etc. Out of these measures, some were required to be completed exclusively by BBMB and the others were to be completed by the Himachal Pradesh Governmnet Departments after getting their proposals vetted/financed by Bhakra Beas Management Board.

Status: The Short-Term measures, which were directly under the control of BBMB, were completed even before onset of monsoon 2003. The measures completed were improvement and modification of 22 No. cross-over bridges of modified design, metalling and tarring of road along one side of Sundernagar Hydel Channel and tree plantation along Sundernagar Hydel Channel and Baggi Control Works.

For development of fisheries, an amount of Rs. 36 lac as first installment was also released to Fisheries Department of Himachal Pradesh in 2003. Fisheries Department was asked to take further necessary steps for the implementation of the scheme. BBMB had been in touch with Fisheries Department who have started implementing the project and they have assured to utilize the Bhakra Beas Management Board funds during the current year.

For the provision of cattle-troughs for animals, the concerned Animal Husbandry Department has been continuously under pursuasion but nothing concrete has come out so far for this project.

ii) Long-term measures: The long-term measures suggested by National Enviornmental Engineering Research Institute (NEERI) were to reduce the silt load at Pandoh Dam and for disposal of silt from Balancing Reservoir, Sundernagar.

Central Pollution Control Board in consultation with Ministry of Environment & Forest constituted an Expert Committee in pursuance of the directions of Hon'ble Himachal Pradesh High Court, Shimla in 2004, for preparing an action plan for management of silt and advice on other relevant issues with respect to Beas Sutlej LInk Project. The Expert Committee after detailed studies for about a year, submitted its final report in the Hon'ble Himchal Pradesh High Court Shimla on 10.05.2005, in which an 'Action Plan' has been proposed for monsoon season for Beas Sutlej Link Project for next 3 to 5 years.

Bhakra Beas Management Board implemented the action plan proposed as above during the monsoon season of 2005 and submitted its implementation report to the Expert Committee in November,2005. A sub Committee was formed by the Expert Committee in December,2005 to inspect the site, who visited Beas Sutej Link Project on 12th and 13th December,2005. The Sub-Committee was fully satisfied with the implementation report of Bhakra Beas Management Board for the monsoon season of 2005. Thereafter, the Expert Committee held its meeting at New Delhi on 16th December,2005. The Expert Committee then submitted its report to the Hon'ble Himchal Pradesh High Court, Shimla before 26th December,2005 i.e. the last date assigned to them by the Hon'ble Court. The Hon'ble Court has accepted the report of the Expert Committee.

MINIMUM FLOW IN RIVER BEAS

In respect of minimum flow from Pandoh dam, BBMB has been following Environment Management Plan prepared by National Environmental Engineering Research Institute. In the Enviornment Management Plan, National Enviornmental Engineering Research Institute had recommended to maintain a minimum daily inflow in river Beas at Mandi town, not less than 5% of minimum daily flow upstream of Pandoh dam. It was also recommended that after accounting for all the khads/rivers/rivulets confluencing with river Beas in the reach between Pandoh dam and Mandi and flowing under normal present condition, the shortfall, if any, may be made up by release of water from Pandoh dam. However, so far no occasion has arisen when water had to be released from Pandoh Dam downstream at the cost of power generation at DPH as the contributions from rivers/rivulets downstream the dam were adequate to meet the stipulated requirement of 5% of minimum daily inflows at Mandi town.

The Himachal Pradesh Government vide Notification No. PC-F(2)-1/2005 dated 16.07.2005 and revised Notification No. PC-f(2)-1/2005 dated 09.09.2005 has ordered to release the minimum flow downstream of Diversion Dams throughout the year at a threshold value of not less than 15% of the minimum inflow observed in the lean season into main river body whose water is being harnessed by such projects. Accordingly, BBMB has started releasing the minimum stipulated flow as desired vide above said notifications from Pandoh dam from September, 2005. In the meantime, BBMB has referred the matter to Ministry of Power for taking the matter with Ministry of Environment & Forests for exempting BBMB from applicability of the notification, being an old project.

Secretary, Power had a meeting with Secretary, Ministry of Environment and Forests (MoEF) on 21.11.2005, wherein the Ministry of Power has taken the matter of minimum lean season discharge from hydro power projects with the Ministry of Enviroment and Forest to decide the matter at the earliest.

CONSULTANCY SERVICES

In an endeavour to synergise the existing potential of BBMB to boost the interests of its partner States, BBMB Consultancy Services were introduced.

The following works were carried out by the Consultancy Services of BBMB during the year 2005:-

1. Successfully running training courses under Distributed Reforms, Upgrades & Management (DRUM) programme for engineers and technicians of Power Utilities of neighbouring States which has been sponsored by Ministry of Power to promote power sector reforms.
2. Provided cost effective expert services for the development of Power Sector infrastructure of the region.

- The following works were completed:
  - Development of 66 KV Sub-Station on turnkey basis in Sector 47, Chandigarh on behalf of Union Territory, Chandigarh Administration.
- The following works were taken in hand:
  - Development of 66 KV Sub-Station on turnkey basis in Sector 56, Chandigarh on behalf of UT Chandigarh Administration.
  - Development of 66 KV Sub-Station at PGIMER complex, Sector 12, Chandigarh on behalf of PGIMER.
  - Preparation of technical specifications for Advanced Eye Centre, at PGIMER complex, Sector 12, Chandigarh on behalf of PGIMER.
- The proposals for the following works are under finalisation:

- Development of SCADA system connecting all the Substation of UT Chandigarh for providing efficient infrastructure for Demand Side Management.
- Strengthening and segregating the existing 11 KV system in PGIMER campus.

3. Provided expert services for Thermovision Scanning and Hotline Maintenance to Power Utilities of Haryana and Delhi.
4. Initiated the efforts for implementing ISO 9001 and 14001 (Quality and Environment Management Systems) to cover entire BBMB.
5. Participated jointly with CEA and SJVNL to address the issues impeding the smooth running of the project and offer recommendations/solutions thereof.
6. Initiated the possibilities of Carbon Trading by participating in Clean Development Mechanism (CDM) programme through sale of Certified Emission Reductions (CERs) generated by the projects under Renovation, Modernisation, and Up-rating (R,M&U) Programme of BBMB for its Hydro Power Stations. Clean Development Mechanism (CDM) is an implementation mechanism for meeting the commitments relevant to developing countries under the Kyoto Protocol (Article 12) adopted by United Nations Framework Convention on Climate Change (UNFCC).

Nangal Dam

Chapter - 23.11

Bureau of Energy Efficiency (BEE)

The Government of India has enacted the Energy Conservation Act, 2001, and for implementing various provisions in the EC Act, Bureau of Energy Efficiency (BEE) was operationalised from 1st March 2002. The EC Act provides a legal framework for energy efficiency initiatives in the country. The Act has many mandatory and promotional initiatives which broadly relates to Designated Consumers, Energy consumption standards and labeling programme for equipment and appliances and Energy conservation building codes for the new commercial buildings. The Bureau is spearheading the task of improving the energy efficiency in various sectors of the economy through regulatory and promotional mechanism. BEE co-ordinates with designated consumers, designated agencies and other organizations; recognizes, identifies and utilizes the existing resources and infrastructure, in performing the functions assigned to it under the EC Act.

Mission of Bureau of Energy Efficiency (BEE)

The Mission of Bureau of Energy Efficiency (BEE) is to develop policy and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act (EC Act), 2001 with the primary objective of reducing energy intensity of the Indian economy. This will be achieved with active participation of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

Projects and Programmes

Bureau of Energy Efficiency has already launched many voluntary and mandatory provisions of the Energy Conservation Act, which received support from all the stakeholders.

BEE supported designated consumers in improving their energy efficiency through launch of many voluntary

One of the Prize Winning Paintings at the painting competition on Energy Conservation Day 2005

Children participating in the painting competetion for Energy Conservation Day 2005

programs .In one of the voluntary initiatives, the Bureau established seven sector specific task forces for Aluminium, Cement, Chlor-Alkali, Fertilizer, Pulp & Paper, Petrochemical & Refinery and Textile Sectors. The formation of task forces is helped in information exchange on best practices in energy conservation among the task force members. BEE also organized workshops, programmes and provided faculty support on the issue of spreading awareness on energy conservation and energy efficient technologies.

In another voluntary initiative, Ministry of Power and Bureau of Energy Efficiency are coordinating the implementation of energy audits study in 9 Government Buildings including Rashtrapati Bhawan, Prime Minister Office, Rail Bhawan, Delhi Airport, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, AIIMS etc. through Energy Service Company (ESCO) route. Implementation of energy efficiency measures in Rashtrapati Bhawan has been completed and is currently under progress in Shram Shakti Bhawan & Transport Bhawan. BEE also launched Small Group Activity focused on energy conservation in 4 industrial units in textile and cement sector. Feed back received from the units indicated that about 5 % savings through housekeeping and no cost measures is possible through this concept. Small group activity is planned to be expanded to cover more sectors.

On the mandatory provisions front, Bureau has taken a pro-active role in establishing a proper energy management system in the country. In this connection, Bureau has conducted the First & Second National certification examination for energy managers & energy auditors in May 2004 and May 2005 and prepared second edition of guidebooks for the energy professionals. The response to

the programme was very encouraging and 1156 Certified Energy Managers and 820 Certified Energy Auditors are in place from both the certification examination. The capacity building of energy managers and energy auditors through this route will have a long-term impact on the Indian economy.

Bureau of Energy Efficiency has also formulated energy-labeling regulations to promote energy efficiency in the design stage itself for Refrigerator, Air conditioners, Motors, Distribution Transformer, Agricultural pump sets and Tube lights. Energy labeling for one appliance, namely, household refrigerator is planned to be launched in 2006 on a voluntary basis.

The "Energy Conservation Building Codes" (ECBC) are the norms and standards of energy consumption, which include considerations for the location, and occupancy of the building. ECBC structure and analysis methodology has been prepared and the draft of ECBC is ready. It is proposed to be launched on voluntary basis.

State wise activities-January to December 2005 (under National Campaign on EC)

• Tamil Nadu	=	7
• Maharashtra	=	36
• Gujarat	=	26
• Uttar Pradesh	=	13
• Kerala	=	5
• New Delhi	=	34
• Haryana	=	18
• Andhra Pradesh	=	6
• Orissa	=	5
• Madhya Pradesh	=	5
• Karnataka	=	5
• Assam	=	9
• Bihar	=	2
• Rajasthan	=	3
• West Bengal	=	11
• All India	=	22
• **Total**	**=**	**207**

National Energy Conservation Awards 2005

Due to consistent efforts put in by BEE, the scheme has become very popular among the industrial units, as is evident from increasing participation level (from 120 in 2000 to 311 in 2005). The Award scheme includes 33 sub-sectors from large and medium scale industries and 3 sub-sectors from small-scale industries. For the year 2005, BEE designed two new award schemes for Government Buildings and Commercial Buildings (Private Sector) and the same were included in the Awards Scheme.

National Campaign on Energy Conservation 2005

National Campaign on Energy Conservation was prepared by BEE and was launched in association with the Ministry of Power and CPSUs under Ministry of Power. Painting competition on Energy conservation was also organized for schoolchildren at school, state and national level throughout the country. BEE is regularly releasing advertisements on energy conservation in print and electronic media. Further, BEE secured the support of more than 50 industrial and commercial units in the Campaign.

Sector wise activities-January to December 2005 (under National Campaign on EC)

• Industrial Sector	=	77
• Commercial	=	34
• Domestic Sector	=	40
• Agriculture	=	10
• Educational Institutions	=	46
• **Total Activities**	**=**	**207**

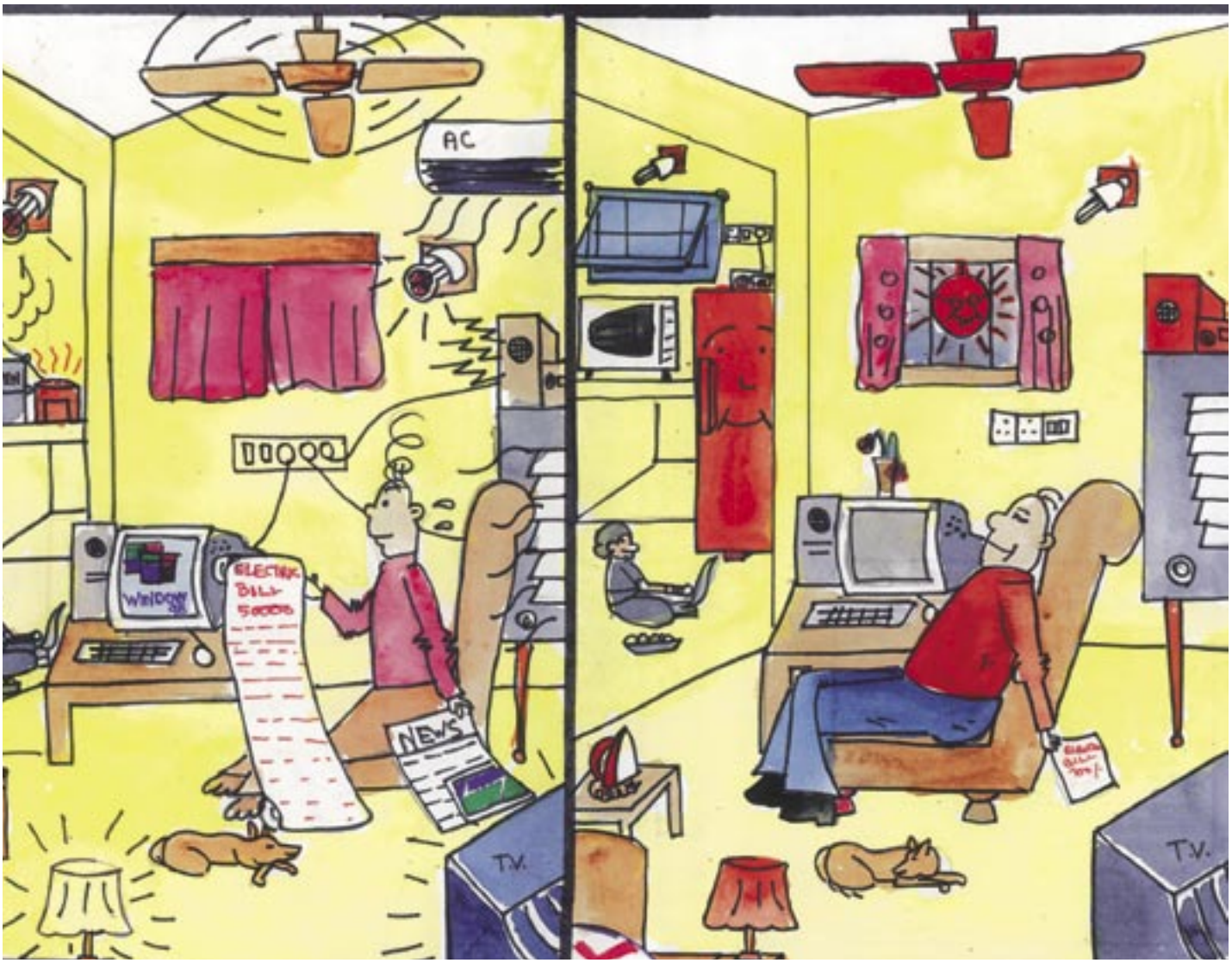
Results achieved by BEE

The results achieved after implementation of various promotional and mandatory provisions in support of the EC Act are as follows:

- 64 Accredited Energy Auditing firms are in place, which have carried out around 2000 Energy Audits in 2003-05.
- 1156 Certified Energy Managers and 512 Certified Energy Auditors are in place. Certified Energy Auditors will be considered for accreditation whereas the designated consumers will consider Certified Energy Managers for appointment or designation as certified energy manager under the EC Act.
- 3rd National Certification Examination for Energy Managers and Energy Auditors 2006 announced
- 4 Guidebooks prepared to assist energy professionals
- Two interactive Websites in place
- 7 Sector specific Task Forces for Aluminium, Cement, Chlor alkali, fertiliser, Pulp & paper, Petrochemical & Refinery and Textile constituted and regular workshops have been held.
- 7 Draft energy auditing codes for utility equipment in place
- Savings of 865 MW of electric power, as equivalent

avoided capacity, achieved during 1999-2005 through National Energy Conservation Award Scheme

- Labeling plan for air conditioners, refrigerators, distribution transformers, fluorescent tube light, motors prepared
- 27 State Governments and Union Territories have notified State level Designated Agencies for the purpose of implementing EC Act within the state
- ECBC structure draft prepared
- Energy audit studies completed in 9 Government buildings to set up an example for private buildings to pursue similar efforts. The buildings included - Rashtrapati Bhawan, Prime Minister's Office and Defence Ministry blocks in South Block, Rail Bhawan, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, R&R Hospital, Terminal I, Terminal II and Cargo Sections of Delhi Airport, and AIIMS. Savings potential between 23 to 46 % identified in the above buildings
- Implementation of Energy Audit Studies in Rashtrapati Bhawan through ESCO route has been completed
- 16 more Government buildings are being taken up in second phase for energy auditing and its implementation through ESCO mode



One of the Prize Winning Paintings at the painting competition on Energy Conservation Day 2005

Chapter - 23.12

CENTRAL POWER RESEARCH INSTITUTE

An autonomous registered society under the Ministry of Power, the Central Power Research Institute (CPRI) is in the service of the Nation, undertaking applied research in electric power engineering besides functioning as an independent testing and certification authority for electric equipment and components to ensure reliability and improve, innovate and develop new products.

Its laboratories located at Bangalore, Bhopal, Nagpur, Thiruvananthapuram, Hydrabad and Ghaziabad are accredited as per latest ISO/IEC 1703\25 standards by National Accreditation Board for Testing & Calibration Laboratories (NABL) . The facilities have, therefore, to be continuously augmented to be able to meet the challenges of the changing National & International standards.

New Test facilities

The following new test facilities have been created at the various laboratories of the Institute:

- Surge immunity test set for performing impulse current & ring wave test
- Auto ignition apparatus to measure ignition temperature of coils
- Air release value to measure gas bubble separation time of petroleum oils
- Facilities for coal fineness analysis
- Special test set up/circuits have been developed for short circuit testing of isolators and earth switches of rating up to 400 kV class as per IEC 62271-102
- Testing of energy meters for voltage and current harmonics
- HV dielectric spectroscopy for conducting insulation diagnostics of power transformers & power cables.
- The Real Time Digital Simulator (RTDS) at Power systems division has been augmented with GPC (Giga Processor Cards) for simulation of complex power systems.
- Test facility for On Load Tap Changer as per national & international standards has been developed at 100 MVA online station at STDS Bhopal.

Special Tests carried out

CPRI as the premier third party testing organization carries out several thousands of routine tests on power apparatus. Some of the important tests carried during the year include the following:

- 200 kV D/C(DD) type tower designed for 15mm ice loading and 1500m individual span and successfully tested for M/s Powergrid
- Seismic qualification test on Transformer weighing 8MT (2000kVA, 6600V/430V)
- Sine beat test on Solenoid valves using Triaxial Seismic shaker.
- Seismic qualification test on HT switchgear class III (6.6 kV, 44kA panel with VCB).
- Short circuit testing of 50MVA, 132/66-33kV Power Transformer.
- Testing of Energy meters as per as ANSI 12.1&12.20.
- Testing of 800kV class Post Insulator Strings & 765kV Line Traps Insulator Strings.
- Testing of Static Var Compensator controller on Real Time Digital Simulator.
- Diagnostic tests on EHV class Transformers (04 Nos.) were carried out at NHPC, Rangit Power Station, Sikkim.
- Diagnostic tests on Transformer, Lightning Arrester & Circuit Breakers were carried out at NHPC, Tanakpur Power Station, Uttaranchal.
- Line Trap for the first time tested in High Power Laboratory for short time withstand current test as per IEC-60353 manufactured by M/s. Alsthom.
- A 220kV tower referred by M/s. PGCIL, Gurgaon was tested successfully. The special design features are that individual span is 1500 meters and the height is 65 metres.
- Design approval of 2 Nos. of 90m ground based microwave towers and 30m roof top tower to M/s. IMI Softwares Ltd., Hyderabad.

- 14 testing of Current Transformers & Potential Transformers at site at M/s. Covanto Smalpatti Operating Maduraj Pvt .Ltd., Maduraj.

Quality Assurance

The Short circuit laboratories of the Institute at Bangalore and Bhopal were accredited by ASTA-BEAB of UK as certified laboratories. With this certification the Indian electrical products manufactures can test their product at CPRI labs and get ASTA-BEAB certification for their products. This has been a major achievement as currently the laboratories of the Institute are used by UL-USA, CSA-Canada for their certification. Efforts are also on for obtaining Membership on the prestigious Short-circuit Testing Liaison (STL) & IECEECB Certification. Efforts to widen scope of ASTA accreditation to cover other test facilities based on market demands is also being contemplated.

ISO certification to Research & Consultancy activities

ISO 9001:2000 Certification Audit at Bangalore & at other units of the Institute has been completed and the Institute has been recommended for certification.

Marketing of ASTA Accreditation

After acquiring the prestigious ASTA-BEAB accreditation several enquiries for testing have been received and the testing for the following organisation have been completed.

1) Larsen & Toubro, India-ACB and SFU
2) Davis Quantec, Malaysia-Bus Trunking Systems.
3) Carbon Lorraine, Bangalore - Fuses
4) Kappa Exports, Chennai - Current Transformers
5) Vikings & Ellison - LV Switchboards
6) Ameeri Industries, Bahrian - LV Panels

R&M, RLA and Consultancy Works undertaken

1. Pre-commissioning testing of 110kV SLPS Cable circuit of TNEB.
2. Condition monitoring tests in on 400kV class Generator transformer at Uri power station & Chamera power station
3. Diagnostic testing of HV motors & diesel generators for M/s SPIC

1800 KVA Power Frequency Cascade Transformer, High Voltage Division Central Power Research Institute, Bangalore

4. Diagnostic tests on power cables for M/s Marmugao post trust.
5. Diagnostic tests on Power transformers for M/s TAPS Steam turbines for M/s GMR Gnergy Ltd. Power cables for M/s NDPL, Transformer oil for M/s NDPL. etc.
6. Remaining Life Assessment of the following power station have been carried out:
   - CTs, CVTs & PTs for M/s KPTCL
   - Super heaters/Reheater tubes
7. Number of 400kV/220kV, 105 MVA Auto transformer for WBSEB.

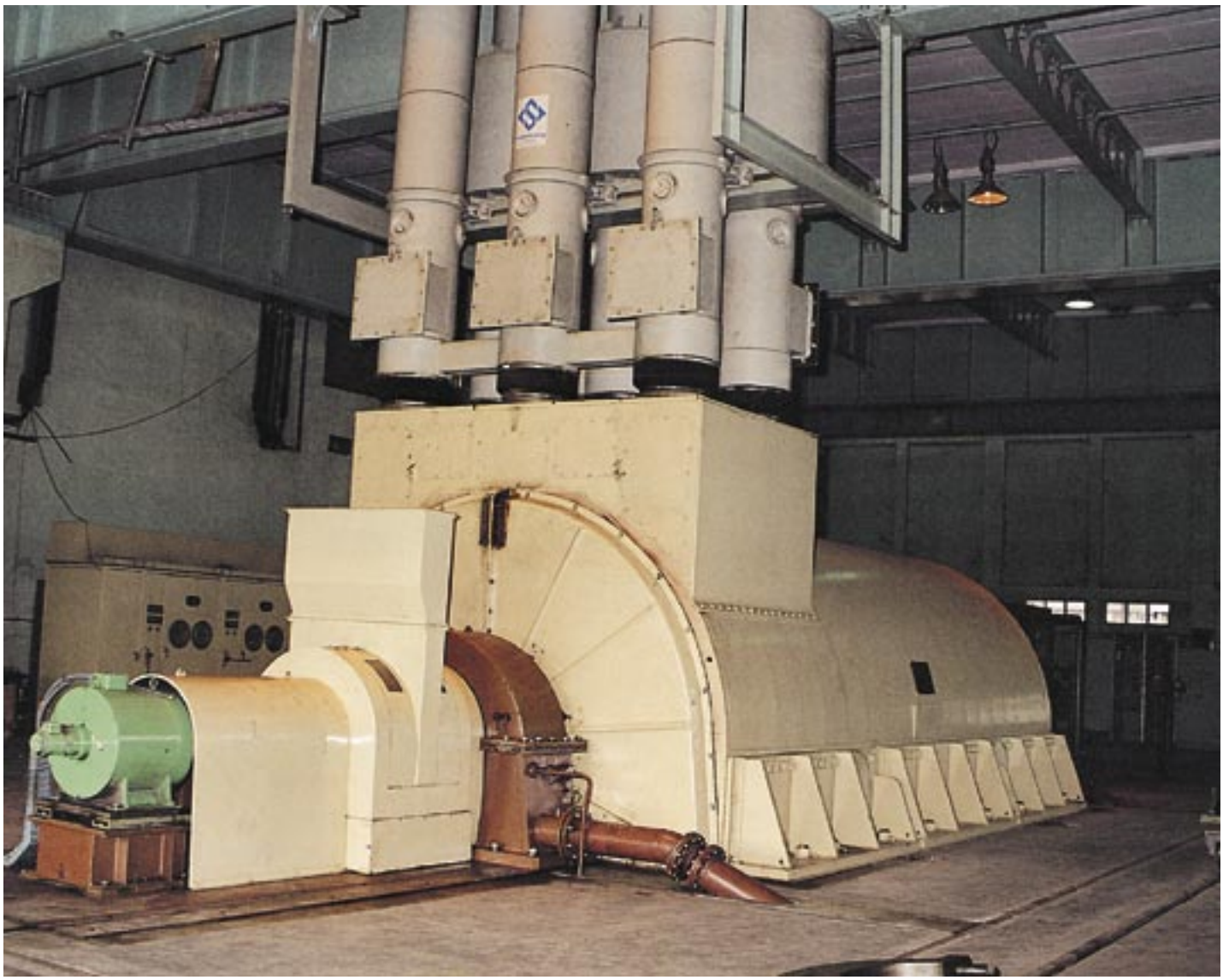
Capital Schemes

During the X five year plan ten capital schemes have been sanctioned at a total oulay of Rs. 4195 lakhs, and are in various stages of implementation.

Research Activities

The Institute continued its strides in the area of research: Eight research projects amounting to Rs. 165 lakhs were commenced during 2005-06 along with 27 ongoing projects commenced during previous years.

R&D Journal CPRI launched in August 2004 with a view to create a scientific forum for dissemination of R&D efforts in the Indian Power Sector the second issue of the journal released in April 2005 and the third issue is in October, 2005.



2500 MVA Short Circuit Generator High Power Laboratory, Central Power Research Institute, Bangalore

Patents and Technology Transfer

The Institute has filed the following 4 new patent applications.

1. PVC based FRLS using Sulfate Glass composition for cable insulation & sheathin applications.
2. A device for location Diametrically opposite point & measuring diameter accurately inside large cylindrical, spherical or conical shells.
3. Pulverized particle flow simulator test rig & method of flow measurement.
4. Stabilised Zirconia Plasma Sprayable powder and Industrial Process for its manufacture.

Marketing & Publicity

The Institute has stepped up its marketing activities both within the country & abroad. Within the country, emphasis was laid on marketing of third party inspection services for power equipment procured by utilities. As a result of this, the Institute got repeat orders for third party inspection services form Utilities such as BESCOM, TNEB, J&K UHBVN, DHBVN, APECL, HVPNL, Delhi Vidyut Board, APTRANSCO etc.

Non Plan Expenditure

The Institute has been meeting its non-plan expenditure through revenue generated by testing and consultancy for the last seventeen years.

Dissemination of Information

The Institute has been organizing Seminars, Conferences, Workshops and Training Programmes to disseminate knowledge & information gained by the Institute for the benefit on the Indian Power sector.

The Institute has organised nine Seminars/ Conferences/ Workshop upto 19th December, 2005 to disseminate knowledge & information gained by the Institute for the benefit of the Indian Power Sector. Three training programmes have been conducted to distribution engineers of the power sector under MoPUSAID sponsored DRUM programme. Also several noted Scientists/Engineers were invited to the Institute to deliver the state of art lectures for the benefit of the employees.

Load Cycle Test Set-up on 220 kV XLPE Cable System Comprising of Straight Through Joint, Sheath Separation Joint and Terminations

Chapter - 23.13

NATIONAL POWER TRAINING INSTITUTE (NPTI)

National Power Training Institute, a Registered Society set up by the Govt. of India under the Ministry of Power, is committed towards the development of Human Resources in Indian Power & Energy Sectors. NPTI with its Corporate Centre at Faridabad operates on an all India basis through its five Regional Institute located in Nayveli, Durgapur, New Delhi, Nagpur, Guwahati and specilalized Centres viz., Power System Training Institute (PSTI) & Hot Line Training Centre (HLTC) at Bangalore, a Centre for Advanced Management and Power Studies (CAMPS)

All the regional Institutes are well equipped with world class Hi-Tech infrastructural facilities for conducting different courses on technical as well as management subjects catering to the needs to Thermal, Hydro, Nuclear Power Plants, Transmission & Distribution systems and Energy related fields.

NPTI has established two 210 MW & one 500 MW real-time, full scope and PC based Thermal Power Plant Training simulators for off-job, hands-on training for betterment of plant operation standards. The Load Desatcher Training Simulator at the Power Systems Training Institute, Bangalore is geared up to meet the training demands of the Power System Management. A Combined Cycle Gas Turbine simulator has also been set up at NPTI Corporate Office, Faridabad.

Live Presentation to the trainees on Cable Jointing

The Hot Line Training Centre at Bangalore imparts training on Live Line Maintenance Techniques on Transmission Lines upto 400 kV level — a unique facility available only at NPTI. A Geographical Information System (GIS) Resource Centre housing Hi-tech Training Tools for training consultancy in the area of GIS based Electricity Distribution Network Planning and Management at a cost of Rs. 123.7 lacs has been commissioned at NPTI Corporate Office, Faridabad.

NPTI has nearly 4 decades of Professional Expertise in the field of Training, Education and HRD in Power Sector. Since its inception NPTI has shared its engineering and technology expertise with more than 1,00,000 Power Professionals besides covering 1,20,000 persons in its mass awareness programs on Energy Conservation, Power Reforms, Electrical Safety, Energy-Environment Interface, Water for Sustainable Power across the country. NPTI has pioneered unique sector-specific innovative programs (duty approved by AICTE, New Delhi) such as B.E. in Power Engineering, Post Graduate Diploma Course in Thermal Power Plant Engineering and First ever MBA in Power Management. All the students of the first two batches of MBA in Power Management being conducted by CAMPS, NPTI, Faridabad were picked up through campus recruitment by renowned companies like CRISIL, PWC, KPMG, NDPL, Reliance Energy, Secure Meters, Adani Exports, KLG Systel, TIFAC, University of Petroleum & Energy Studies, UJVNL, Noida Power, Tata Power etc.

Performance during April-November' 2005

No. of Trainees Trained	4677
No. of Trainee-weekes	51830
Revenue Earnings	Rs. 855.49 lacs

Important Activities

1. Distribution Reform, Upgradation and Management (DRUM) Training

   NPTI has trained over 250 trainees from CEA, CPSUs and SEBs under this scheme

2. Technology Improvement Program in Grid Operation for CEA

NPTI is conducting training programmes on Technology Improvement Grid Operation for CEA/REB Engineers. Five Programs of two weeks duration have been conducted and trained around 100 Engineers. The intensive training includes visit to BHEL manufacturing works and hands-on practice on 500 MW Simulator & Load Despatcher Simulator.

NPTI has launched a specialized Training Programme on Power Distribution of 26 week duration for engineers at Nagpur and PSTI, Bangalore, 16 Graduate Engineers attended the training programme on "Operation & Maintenance of Power Transmission & Distribution Systems" at Nagpur and 9 at PSTI. The programme was successfully concluded on 8th July, 2005.

3. Transnational Training

A 4 week programmes on "O & M of CCGT Power plant" was organized for 7 trainees of AKS, Barkha from Srilanka from 27th June to 22nd July 2005, by NPTI, Faridabad.

A 12 week Training Programme on "Power Plant Management comprising 13 trainees from Sudan, Cambodia, Colombia, Philippines, Iraq, Myanmar, Nigeria etc. concluded on 8th April, 2005.

4. Inauguration of 4th Batch to MBA in Power Management

The 4th Batch of MBA in Power Management comprising 60 Students was inaugurated by the Special Secretary, Ministry of Power on 15th September, 2005.

NPTI Corporate Office Complex, Faridabad

Chapter - 24

OTHER IMPORTANT ACTIVITIES

Power Trading Scenario

The Electricity Act, 2003 came into force on 10th June 2003 and the reforms in the power sector have been continuing at a steady pace. The Electricity Act provides a unique opportunity for creditworthy Organizations to enter national electricity market and participate in all segments of growth in the power sector- contributing to the Governments's objective of ensuring reliable and quality power to all by the year 2012, making the growth in the power infrastructure self sustainable and attaining the accelerated growth and development for the country.

The Electricity Act 2003, envisages a multi-buyer and multi-seller market model, wherein, the electricity trading is a critical element in the value chain to develop a competitive market for electricity. The Act recognizes trading in power as a distinct business activity. Diversities between availability and consumption of power presents significant potential for trading and providing cheap and reliable power to consumers in deficit area.

As per Section 12 of The Electricity Act 2003, trading in electricity is a licensed activity and no person can undertake trading unless he is authorised by a licence issued by the Appropriate Commission or is exempted under relevant provisos of Section 14. The Central Electricity Regulatory Commission (CERC), in exercise of powers conferred under Section 178 of the Electricity Act 2003, notified on 6 th Feb. 2004 Regulations namely the Central Electricity Regulatory Commission (Procedure, Terms & Conditions for grant of Trading Licence and other related matters) Regulations, 2004 dated 30 th January, 2004.

During the last two years, 18 interstate traders have obtained licence for serving the needs of the various clients with the total annual traded volume of about 12 Billion Units. Presently five traders, namely, PTC India, NTPC Vidyut Vyapar Nigam, Adani Exports, Tata Power Trading Company and Reliance Energy trading are actively associated in the electricity trading business.

CERC also notified Central Electricity Regulatory Commission (Open Access in Inter-state Transmission) Regulations, 2004 dated 30th January 2004, which became effective from 6th May 2004. The open access regulations were further amended by CERC in February 2005 on due consideration of difficulties faced during implementation which came into force from April 2005. With the amendment of the Open Access Regulations dated 21st February 2005 flexibility of transactions have significantly increased in terms of day-ahead and intra-day trading of electricity, which lead to improved utilisation of sparse generation and transmission capacities.

With the acceleration in the trading activities, the surplus power of the order of 1000-1200 MW in the Eastern Region and North Eastern Region has been fruitfully utilized in the other deficit regions, through the inter-regional transmission links.

The details of short-term trading volumes accomplished by different traders during the last two years is as under:

S.No	Trader	FY 2003-04 (MU)	FY 2004-05 (MU)
1	PTC	11029	8887
2	NVVN	962	2687
3	ADANI	Nil	735
4	TATA	Nil	103
5	TOTAL	11991	12412

Carrying forward, the open access regulations have also been notified by the State regulators to provide access of cheaper power to consumers within the States in the phased manner.

The seasonal surplus of power is concentrated in the Eastern Region with surpluses of order of 1500-2000 MW among the States of Orissa, West Bengal and DVC. Kerala, Andhra Pradesh, Tamilnadu & Karnataka in the Southern region also trade surplus power. Major sellers of power have resorted to tendering process for determination of rate and under deficit market conditions, the rate of power has gone up due to bidding process adopted by the Sellers.

The National Electricity Policy requires that the Appropriate Commission shall notify the enabling regulations for power exchange within six months. An initiative has been taken to examine various issues related to the feasibility of Power Exchange at National Level in India, which will provide a

transparent and neutral platform for promoting competition in supply of electricity at wholesale level. A Core-Team (with representatives from MoP, CEA, NTPC, PGCIL, NVVN and PTC) has been constituted to interact with the Consultants appointed by NTPC for this purpose viz. M/s Nord Pool Consulting of Norway and M/s CRISIL, India. The pre-feasibility report has been submitted by the Consultants. Detailed Project Report and other associated reports are under finalization. Thereafter, workshops shall be organized to sensitize potential participants.

OFFICE OF THE CONTROLLER OF ACCOUNTS

The Secretary is the Chief Accounting Authority. The office of Controller of Accounts functions under overall supervision of Joint Secretary & Financial Adviser. The office is headed by the Controller of Accounts with one Deputy Controller of Accounts and seven working Pay & Accounts Officers responsible for making all the payments, expenditure control and accounting of all the receipts and payments. Out of these one Pay and Accounts office is stationed in Bangalore and one is the in-charge of the internal audit wing. The Principal Accounts Office is responsible for consolidation of monthly Accounts of all the Pay & Accounts Offices for the preparation of Appropriation Account, Statement of Central Transactions (SCT) and Finance Account on annual basis for submission to the Controller General of Accounts (CGA) Department of Expenditure, Ministry of Finance. It is also responsible for the compilation of various datas and generation of report for submission to Ministry of Finance, Power. O\O C& AG and CGA etc.

The Office of Controller of Accounts also brings out an annual accounting booklet called 'Accounts at a Glance' which contains total transactions of the Ministry and its various organizations. It gives a brief overview of Accounting trends. The office of the Controller of Accounts is also responsible for preparing the Receipt Budget of the Ministry.

Internal Audit Wing

The Internal Audit Wing ensures adoption of sound procedure, regularities and financial propriety of transactions of accounts. This Wing advises the DDOs and their staff for correct implementation of rules and maintenance of proper records. I.A.W. also pursues the settlement of objections raised by Statutory Audit.

Performance of the Internal Audit Wing during the year 2004-2005 is as under:

Year (Accounts Due for audit during 2004-05)	No. of Units due /inspected	No. of Paras raised	No. of Paras settled	No. of Paras outstanding upto 30-11-2005
2004-05	21/17	167	126	144

AUDIT OBSERVATIONS

The Organisation-wise break up of Outstanding Audit Observations and Inspection Reports as on 30-11-2005, for the financial year 2004-2005 is as under:

S.No.	Organisation	No.of Inspection Reports	No. of Paras
1.	Ministry of Power	2	29
2.	Central Electricity authority	15	86
3.	Controller Of Accounts		
	(1) PAO, CEA, N.Delhi	1	9
	(2) PR.A.O (Admn) N.Delhi	1	7
	(3) PAO, BMCC, New Delhi	1	1
	(4) PAO, CERC, New Delhi	1	2
	(5) PAO Sectt, New Delhi	1	10
Total		**22**	**144**

Computerisation

The Office of the Controller of Accounts is generation Computerised Accounts through two packages namely COMPACT (PAO-2000) for accounts of Pay & Accounts Offices and CONTROLLER'S ACCOUNTING (CONTACT) for monthly accounts of Pr. Accounts Office. The Package named COMPACT (PAO, 2000) for Pre-check, Compilation, GPF and Pension etc. Modules) for Pay and Accounts Offices and CONTACT (ORA) for Principal Accounts Office has been working properly.

A Pay package has been developed using PAY-TRAN through which pay bills, pay slips and other reports are being generated.

As per this office records the position of pending Audit Paras is as under:-

	Pending with				Total
	MOP	Unit	Audit	COPU/ Monitoring Cell	
(i) Commercial Paras	16	10	34	01	61
(ii) Civil Paras	04	02	16	01	23
(iii) Draft Paras	03	12	30	-	45
Total	**23**	**24**	**80**	**02**	**129**

PROGRESS ON IMPLEMENTION OF INFORMATION TECHNOLOGY IN MINISTRY OF POWER

- File Tracking System (FTS) has been initiated for effective online monitoring of movement of files and receipts in the Ministry.
- A web enabled application software has been developed and implemented for data sharing and monitoring of hydro projects. The application, after completion of mandatory cyber security audit has been hosted on NICNET server at http://hydropowernet.nic.in.
- A summary of monthly accounts of the Ministry is being posted on the website of the Ministry of Power by the office of Controller of Accounts. This brings about transparency in accounting system and also can assist the management in its financial decisions.
- National Power Monitoring Center (NPMC) has been established at Shram Shakti Bhawan, New Delhi, which has computer facilities which incorporates data acquisition from different sources for monitoring of real time operational data of Generation & Transmission system as well as progress/achievement of Generation capacity addition, implementation of various transmission and distribution systems including Accelerated Power Development and Reforms Programme (APDRP) and Rural Electrification schemes. Video conferencing facility is also available at NPMC.
- As part of the e-governance activities an intrapower portal is under implementation by the NIC. The features available are electronics notice board which shall post notification, office orders, circulars, and announcements. Personnel & establishment which will have personnel profile, leave records, ACR pending status and other relevant data, pay slips, income tax statements, tax calculations, GPF details, rent recoveries and telephone bill payment task monitoring system.

CONSULTATIVE COMMITTEE OF MEMBERS OF PARLIAMENT

During the year 2005, the Ministry of Power coordinated and organized four meetings of the Consultative Committee of Members of Parliament for the Ministry of Power. The subjects for discussion at these meetings were (i) POWER GENERATION CAPACITY ADDITION PROGRAMME IN X-PLAN"; (ii) TRANSMISSION & DISTRIBUTION LOSS/AT&C LOSS"; (iii) TRANSMISSION & DISTRIBUTION LOSS/ AT&C LOSS"; and (iv) "INFORMATION TECHNOLOGY IN MANAGING DISTRIBUTION".

GRIEVANCE REDRESSAL

The Grievance Cell in Ministry of Power deals with Redressal of grievances relating to various grievances

pertaining to Public Sector Undertakings, Autonomous bodies, Statutory bodies and attached office under the administrative purview of Ministry of Power. The status of Redressal of grievances is being monitored on monthly basis.

The status of grievance Redressal for the period ending 30th November 2005 is as under

Total number of grievances dealt	Number of grievances disposed off	Number of grievances pending
51	34	17

POWERGRID's TRANSMISSION SYSTEM FOR DEVELOPMENT OF NORTH EASTERN REGION (NER)

At present, POWERGRID has a transmission network at different voltage levels viz. 400kV, 220kV and 132kV level for distribution of power from various central sector generating stations to different states in North-Eastern Region as well as for Export/Import of power with neighbouring states/ region. POWERGRID's transmission system in NER consists of about 5,380 ckt. kms. of transmission lines including 919ckt. km. of interregional lines between NER & ER and 14 sub-stations. POWERGRID has already invested over Rs. 1500 Crore in NER for development of transmission network. The transmission system contains high capacity lines viz. 400kV D/c Misa – Balipara – Bongaigaon – Malda corridor, which is operational since early 2000. However, on account of pegging of transmission tariff in NER at 35p/ kwh POWERGRID has already incurred a revenue loss of Rs. 684.95 Crore till 2004-05. As per current calculations, POWERGRID shall incur a total loss of Rs. 830.06 Crore by the end of 2006-07.

POWERGRID is also executing few transmission lines on deposit work basis like 132kV Ziro-Daporijo-Along transmission system, 220kV Kathalguri-Deomali transmission system, and 132 kV Balipara-Khupi-Kimi transmission line which is scheduled to be completed shortly. In order to ensure reliable supply of power to the states of the North-Eastern region, POWERGRID is planning to execute "Missing Link Transmission System in NER" with a total cost of about 60cr. in near future.

In future, generations projects of about 4000MW capacity comprising of Kameng(600 MW), Lower Subansiri(2000 MW) and Tipaimukh HEP(1500 MW) are scheduled to come up by the end of 11th plan / early 12th plan. The transmission schemes corresponding to the above generation projects are in advance stages of finalization.

Besides the projects mentioned above, Govt. of India has launched initiative of 50,000 MW hydro projects which includes 40,000MW hydro power projects in NER, Sikkim and Bhutan. Keeping in view the on-going projects in Sikkim & Bhutan and other future projects in NER, the total power need to be evacuated from NER, Sikkim and Bhutan is of the order of 50,000 MW. This power would be transferred through narrow corridor of Chicken Neck area, where there is a serious Right of Way problem, for onward distribution to deficit regions like NR and WR. In view of the requirement of transfer of huge power through narrow and difficult terrain, it is important that only high capacity transmission corridors each of ultimate capacity 5000-6000 MW would need to be constructed.

For evacuation of power from the future hydro projects of various capacity it is proposed to develop a number of power pooling stations, where power from the nearby generating stations would be pooled for further transmission to different regions over hybrid transmission system of high capacity HVDC and AC lines. To evacuate about 50,000 MW power from NER & Sikkim/Bhutan, it is proposed that about 6-7 nos. of 6000MW +800kV HVDC bipole and 4-5 nos. of high capacity AC lines would be required.

In view of the requirement of evacuation of bulk quantity of future power from hydro projects in NER, Sikkim and Bhutan, it is important to firm up the commissioning of substantial capacity of generation projects at a time so as to utilize the transmission corridors in an optimum manner. It is therefore, required to go ahead with Integrated Resource Planning so that the cost of energy transferred from NER to other regions over the high capacity transmission corridors can be optimized.

RIGHT TO INFORMATION ACT. 2005

The Right to Information Act, 2005 has been implemented in the Ministry of Power as per the orders received from the Department of Personnel & Training. Deputy Secretary (Grievances) and Additional Secretary (Power) have been nominated as the Public Information Officer and the Appellate Authority respectively for the Ministry of Power as per Sections 5(i) & (ii) and 19 (1) of the Act.

All the organizations under the Ministry of Power (PSUs/ Autonomous Bodies/Statutory Bodies etc.) have also implemented the Act. Each organization has nominated APIOs/PIOs/Appellate authorities as per the requirements of the Act.

As required under Section 4 of the Act, a compendium has been prepared in respect of Ministry of Power. The same has also been posted on the website of the Ministry of Power, (www.powermin.gov.in).

The Right to Information Act came into effect from 12th October, 2005. So far the Ministry has received a number of applications which have been disposed off within the mandatory period of 30 days. Till the period ending 31st December, 2005, we have received 11 applications. Wherever it was found that the Ministry is not the concerned Public Authority the same were returned (in original) to the applicants. The final replies within the mandatory period of 30 days has been given to three applicants. Of these, one applicant has appealed which is under consideration.

RECREATION ACTIVITIES

The Ministry is promoting sports and cultural activities. Power Sports Control Board (PSCB), with the Minister-in-charge of the Ministry of Power as Chairman, constituted as a nodal agency for arranging various tournaments in various disciplines every year, all over the country with the help of member organizations. i.e. Central Electricity Authority and all the Public Sector Undertakings/ Autonomous bodies etc. under the administrative control of the Ministry of Power,

The Ministry has a Recreation Club for its staff for looking after the cultural and sports activities. The Hon'ble Minister of Power and the Secretary (Power) are its Chief Patron and Patron, respectively. The teams from Ministry of Power have been taking part in different disciplines in various tournaments and cultural meets organized by PSCB, and inter-ministerial tournaments organized by Central Civil Services Cultural and Sports Board (CCSCSB) of the Department of Personnel & Training, Government of India.

In 2005-06, Shri Randhir Singh Toor of this Ministry stood first in the Inter Ministry Wrestling Tournament (2005-06) and had represented Central Secretariat Delhi, in the All India Civil Services Wrestling Tournament (2005). Shri Paritosh Gupta had represented Central Secretariat Delhi, in the All India Civil Services Carom Tournament (2005). The team stood Runners-up. Shri Paritosh Gupta was also appointed Manager in the prestigious All India Carrom Tournament held at Pune in January, 2006. In PSCB carom tournament (2005-06), Shri M. P. Chamoli was the Winner and Shri Paritosh Gupta was the Runner-up in singles category. Shri Gupta and Shri Chamoli were winners in doubles category.

Teams of 10th Inter PSU Bridge & 8th Inter PSU Carrom Tournament, 2005 from Ministry of Power

Winners of 8th Inter PSU Carrom Tournament, 2005 from Ministry of Power

Chapter -25

REGION-WISE INSTALLED CAPACITY (STATEMENTS I TO VII)

Statement-I

ALL INDIA INSTALLED CAPACITY (IN MW) OF POWER STATIONS LOCATED IN THE REGIONS OF MAIN LAND AND ISLANDS AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup					Nuclear	RES						Grand Total
		Hydro	Thermal			Total Thermal		SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Northern Region	State	6572.59	10542.50	901.20	14.99	11458.69	0.00	509.72	230.44	0.00	0.00	0.00	740.16	18771.44
	Private	390.20	0.00	0.00	0.00	0.00	0.00	0.00	54.30	7.45	108.80	9.75	180.30	570.50
	Central	4108.00	6840.00	2311.99	0.00	9151.99	1180.00	0.00	0.00	0.00	0.00	0.00	0.00	14439.99
	Sub Total	**11070.79**	**17382.50**	**3213.19**	**14.99**	**20610.68**	**1180.00**	**509.72**	**284.74**	**7.45**	**108.80**	**9.75**	**920.46**	**33781.93**
Western Region	State	5015.83	14264.50	1390.72	17.28	15672.50	0.00	266.29	168.08	0.00	0.00	0.00	434.37	21122.70
	Private	460.50	2290.00	2392.00	0.20	4682.20	0.00	0.00	570.60	23.66	48.50	7.58	650.34	5793.04
	Central	1000.00	4360.00	1292.00	0.00	5652.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	7952.00
	Sub Total	**6476.33**	**20914.50**	**5074.72**	**17.48**	**26006.70**	**1300.00**	**266.29**	**738.68**	**23.66**	**48.50**	**7.58**	**1084.71**	**34867.74**
Southern Region	State	10967.44	7392.50	735.50	234.60	8362.60	0.00	616.01	1390.43	0.00	0.00	0.00	2006.44	21336.48
	Private	58.95	510.00	2115.70	704.72	3330.42	0.00	0.00	1179.80	26.35	592.30	24.63	1823.08	5212.45
	Central	0.00	8090.00	350.00	0.00	8440.00	830.00	0.00	0.00	0.00	0.00	0.00	0.00	9270.00
	Sub Total	**11026.39**	**15992.50**	**3201.20**	**939.32**	**20133.02**	**830.00**	**616.01**	**2570.23**	**26.35**	**592.30**	**24.63**	**3829.52**	**35818.93**
Eastern Region	State	2262.52	5538.50	100.00	17.06	5655.56	0.00	185.15	1.10	0.00	0.00	0.00	186.25	8104.33
	Private	0.00	1557.58	0.00	0.14	1557.72	0.00	0.00	0.00	7.12	0.00	0.03	7.15	1564.87
	Central	204.00	6717.50	90.00	0.00	6807.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7011.50
	Sub Total	**2466.52**	**13813.58**	**190.00**	**17.20**	**14020.78**	**0.00**	**185.15**	**1.10**	**7.12**	**0.00**	**0.03**	**193.40**	**16680.70**
North Eastern Region	State	235.02	330.00	351.00	142.74	823.74	0.00	123.21	0.00	0.00	0.00	0.00	123.21	1181.97
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	0.00	1.60	0.00	0.00	1.60	26.10
	Central	860.00	0.00	375.00	0.00	375.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1235.00
	Sub Total	**1095.02**	**330.00**	**750.50**	**142.74**	**1223.24**	**0.00**	**123.21**	**0.00**	**1.60**	**0.00**	**0.00**	**124.81**	**2443.07**
Islands	State	0.00	0.00	0.00	50.02	50.02	0.00	5.25	0.00	0.00	0.00	0.00	5.25	55.27
	Private	0.00	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17	20.17
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub Total	**0.00**	**0.00**	**0.00**	**70.02**	**70.02**	**0.00**	**5.25**	**0.00**	**0.17**	**0.00**	**0.00**	**5.42**	**75.44**
	State	25053.40	38068.00	3478.42	476.69	42023.11	0.00	1705.63	1790.05	0.00	0.00	0.00	3495.68	70572.19
	Private	909.65	4357.58	4532.20	725.06	9614.84	0.00	0.00	1804.70	66.35	749.60	41.99	2662.64	13187.13
	Central	6172.00	26007.50	4418.99	0.00	30426.49	3310.00	0.00	0.00	0.00	0.00	0.00	0.00	39908.49
All India	**Total**	**32135.05**	**68433.08**	**12429.61**	**1201.75**	**82064.44**	**3310.00**	**1705.63**	**3594.75**	**66.35**	**749.60**	**41.99**	**6158.32**	**123667.81**

Abbreviation : SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Note : The capacity of Renewable Energy Sources including Small hydro projects(SHP below 20 MW) furnished by MNES and included in the installed capacity list of CEA is under reconciliation.

Statement-II

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN WESTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup						R E S						Grand Total
		Hydro	Thermal			Total Thermal	Nuclear	SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Goa	State	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.05
	Private	0.00	0.00	48.00	0.00	48.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	48.02
	Central	0.00	257.03	0.00	0.00	257.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	257.03
	Sub-Total	**0.00**	**257.03**	**48.00**	**0.00**	**305.03**	**0.00**	**0.05**	**0.00**	**0.02**	**0.00**	**0.00**	**0.07**	**305.10**
Daman & Diu	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	8.04	4.13	0.00	12.17	1.98	0.00	0.00	0.00	0.00	0.00	0.00	14.15
	Sub-Total	**0.00**	**8.04**	**4.13**	**0.00**	**12.17**	**1.98**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**14.15**
Gujarat	State	713.00	4402.00	478.72	17.28	4898.00	0.00	7.00	97.73	0.00	0.00	0.00	104.73	5715.73
	Private	0.00	640.00	1424.00	0.20	2064.20	0.00	0.00	155.80	14.58	0.50	2.95	173.83	2238.03
	Central	0.00	828.89	417.40	0.00	1246.29	555.00	0.00	0.00	0.00	0.00	0.00	0.00	1801.29
	Sub-Total	**713.00**	**5870.89**	**2320.12**	**17.48**	**8208.49**	**555.00**	**7.00**	**253.53**	**14.58**	**0.50**	**2.95**	**278.56**	**9755.05**
Madhya Pradesh	State	1459.16	2157.50	0.00	0.00	2157.50	0.00	41.16	6.85	0.00	0.00	0.00	48.01	3664.67
	Private	13.50	0.00	0.00	0.00	0.00	0.00	0.00	22.00	4.73	1.00	2.73	30.46	43.96
	Central	1000.00	1057.60	252.91	0.00	1310.51	92.88	0.00	0.00	0.00	0.00	0.00	0.00	2403.39
	Sub-Total	**2472.66**	**3215.10**	**252.91**	**0.00**	**3468.01**	**92.88**	**41.16**	**28.85**	**4.73**	**1.00**	**2.73**	**78.47**	**6112.02**
Chhatisgarh	State	120.00	1280.00	0.00	0.00	1280.00	0.00	11.00	0.00	0.00	0.00	0.00	11.00	1411.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	11.00	0.00	11.51	11.51
	Central	0.00	210.00	0.00	0.00	210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	210.00
	Sub-Total	**120.00**	**1490.00**	**0.00**	**0.00**	**1490.00**	**0.00**	**11.00**	**0.00**	**0.51**	**11.00**	**0.00**	**22.51**	**1632.51**
Maharastra	State	2723.67	6425.00	912.00	0.00	7337.00	0.00	207.08	63.50	0.00	0.00	0.00	270.58	10331.25
	Private	447.00	1650.00	920.00	0.00	2570.00	0.00	0.00	392.80	3.82	36.00	1.90	434.52	3451.52
	Central	0.00	1339.05	397.28	0.00	1736.33	582.06	0.00	0.00	0.00	0.00	0.00	0.00	2318.39
	Sub-Total	**3170.67**	**9414.05**	**2229.28**	**0.00**	**11643.33**	**582.06**	**207.08**	**456.30**	**3.82**	**36.00**	**1.90**	**705.10**	**16101.16**
Dadra & Nagar Haveli	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	9.04	26.61	0.00	35.65	1.98	0.00	0.00	0.00	0.00	0.00	0.00	37.63
	Sub-Total	0.00	9.04	26.61	0.00	35.65	1.98	0.00	0.00	0.00	0.00	0.00	0.00	37.63
	Central - Unallocated	0.00	650.35	193.67	0.00	844.02	66.10	0.00	0.00	0.00	0.00	0.00	0.00	910.12
Total western Region	State	5015.83	14264.50	1390.72	17.28	15672.50	0.00	266.29	168.08	0.00	0.00	0.00	434.37	21122.70
	Private	460.50	2290.00	2392.00	0.20	4682.20	0.00	0.00	570.60	23.66	48.50	7.58	650.34	5793.04
	Central	1000.00	4360.00	1292.00	0.00	5652.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	7952.00
	Grand Total	**6476.33**	**20914.50**	**5074.72**	**17.48**	**26006.70**	**1300.00**	**266.29**	**738.68**	**23.66**	**48.50**	**7.58**	**1084.71**	**34867.74**

Abbreviation: SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Statement-III

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN SOUTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup					Nuclear	RES						Grand Total
		Hydro	Thermal			Total Thermal		SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Andhra Pradesh	State	3572.19	2952.50	272.00	0.00	3224.50	0.00	178.81	33.40	0.00	0.00	0.00	212.21	7008.90
	Private	3.75	0.00	1233.40	36.80	1270.20	0.00	0.00	87.20	15.38	267.30	21.65	391.53	1665.48
	Central	0.00	2428.38	0.00	0.00	2428.38	33.15	0.00	0.00	0.00	0.00	0.00	0.00	2461.53
	Sub-Total	**3575.94**	**5380.88**	**1505.40**	**36.80**	**6923.08**	**33.15**	**178.81**	**120.60**	**15.38**	**267.30**	**21.65**	**603.74**	**11135.91**
Karnataka	State	3431.20	1470.00	0.00	0.00	1470.00	0.00	274.88	288.98	0.00	0.00	0.00	563.86	5465.06
	Private	55.20	260.00	220.00	234.42	714.42	0.00	0.00	121.70	4.61	152.00	1.00	279.31	1048.93
	Central	0.00	1118.67	0.00	0.00	1118.67	133.59	0.00	0.00	0.00	0.00	0.00	0.00	1252.26
	Sub-Total	**3486.40**	**2848.67**	**220.00**	**234.42**	**3303.09**	**133.59**	**274.88**	**410.68**	**4.61**	**152.00**	**1.00**	**843.17**	**7766.25**
Kerala	State	1818.20	0.00	0.00	234.60	234.60	0.00	84.62	2.00	0.00	0.00	0.00	86.62	2139.42
	Private	0.00	0.00	174.00	21.84	195.84	0.00	0.00	0.00	0.73	0.00	0.00	0.73	196.57
	Central	0.00	798.38	350.00	0.00	1148.38	58.51	0.00	0.00	0.00	0.00	0.00	0.00	1206.89
	Sub-Total	**1818.20**	**798.38**	**524.00**	**256.44**	**1578.82**	**58.51**	**84.62**	**2.00**	**0.73**	**0.00**	**0.00**	**87.35**	**3542.88**
Tamil Nadu	State	2145.85	2970.00	431.00	0.00	3401.00	0.00	77.70	1066.05	0.00	0.00	0.00	1143.75	6690.60
	Private	0.00	250.00	488.30	411.66	1149.96	0.00	0.00	970.90	5.03	173.00	1.98	1150.91	2300.87
	Central	0.00	2364.81	0.00	0.00	2364.81	510.16	0.00	0.00	0.00	0.00	0.00	0.00	2874.97
	Sub-Total	**2145.85**	**5584.81**	**919.30**	**411.66**	**6915.77**	**510.16**	**77.70**	**2036.95**	**5.03**	**173.00**	**1.98**	**2294.66**	**11866.44**
N.L.C	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	100.17	0.00	0.00	100.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.17
	Sub-Total	**0.00**	**100.17**	**0.00**	**0.00**	**100.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**100.17**
Pondicherry	State	0.00	0.00	32.50	0.00	32.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.60	0.60
	Central	0.00	214.01	0.00	0.00	214.01	12.60	0.00	0.00	0.00	0.00	0.00	0.00	226.61
	Sub-Total	**0.00**	**214.01**	**32.50**	**0.00**	**246.51**	**12.60**	**0.00**	**0.00**	**0.60**	**0.00**	**0.00**	**0.60**	**259.71**
	Central - Unallocated	0.00	1065.58	0.00	0.00	1065.58	81.99	0.00	0.00	0.00	0.00	0.00	0.00	1147.57
Total Southern Region	State	10967.44	7392.50	735.50	234.60	8362.60	0.00	616.01	1390.43	0.00	0.00	0.00	2006.44	21336.48
	Private	58.95	510.00	2115.70	704.72	3330.42	0.00	0.00	1179.80	26.35	592.30	24.63	1823.08	5212.45
	Central	0.00	8090.00	350.00	0.00	8440.00	830.00	0.00	0.00	0.00	0.00	0.00	0.00	9270.00
	Grand Total	**11026.39**	**15992.50**	**3201.20**	**939.32**	**20133.02**	**830.00**	**616.01**	**2570.23**	**15.58**	**477.00**	**3.98**	**3829.52**	**35818.93**

Abbreviation: SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Statement-IV

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup					Nuclear	RES						Grand Total
		Hydro	Thermal			Total Thermal		SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Bihar	State	44.90	553.50	0.00	0.00	553.50	0.00	45.90	0.00	0.00	0.00	0.00	45.90	644.30
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.02
	Central	21.00	978.79	0.00	0.00	978.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	999.79
	Sub-Total	**65.90**	**1532.29**	**0.00**	**0.00**	**1532.29**	**0.00**	**45.90**	**0.00**	**0.02**	**0.00**	**0.00**	**45.92**	**1644.11**
Jharkhand	State	130.00	1260.00	0.00	0.00	1260.00	0.00	4.05	0.00	0.00	0.00	0.00	4.05	1394.05
	Private	0.00	360.00	0.00	0.00	360.00	0.00	0.00	0.00	0.08	0.00	0.00	0.08	360.08
	Central	8.00	254.92	0.00	0.00	254.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	262.92
	Sub-Total	**138.00**	**1874.92**	**0.00**	**0.00**	**1874.92**	**0.00**	**4.05**	**0.00**	**0.08**	**0.00**	**0.00**	**4.13**	**2017.05**
West Bengal	State	161.70	3305.00	100.00	12.06	3417.06	0.00	92.30	1.10	0.00	0.00	0.00	93.40	3672.16
	Private	0.00	1197.58	0.00	0.14	1197.72	0.00	0.00	0.00	6.95	0.00	0.00	6.95	1204.67
	Central	17.00	667.06	0.00	0.00	667.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	684.06
	Sub-Total	**178.70**	**5169.64**	**100.00**	**12.20**	**5281.84**	**0.00**	**92.30**	**1.10**	**6.95**	**0.00**	**0.00**	**100.35**	**5560.89**
D.V.C	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	150.00	2807.50	90.00	0.00	2897.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3047.50
	Sub-Total	**150.00**	**2807.50**	**0.00**	**0.00**	**2897.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3047.50**
Orissa	State	1893.92	420.00	0.00	0.00	420.00	0.00	7.30	0.00	0.00	0.00	0.00	7.30	2321.22
	Private	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.07	0.00	0.03	0.10	0.10
	Central	0.00	1130.93	0.00	0.00	1130.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1130.93
	Sub-Total	**1893.92**	**1550.93**	**0.00**	**0.00**	**1550.93**	**0.00**	**7.30**	**0.00**	**0.07**	**0.00**	**0.03**	**7.40**	**3452.25**
Sikkim	State	32.00	0.00	0.00	5.00	5.00	0.00	35.60	0.00	0.00	0.00	0.00	35.60	72.60
	Private	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	8.00	60.08	0.00	0.00	60.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.08
	Sub-Total	**40.00**	**60.08**	**0.00**	**5.00**	**65.08**	**0.00**	**35.60**	**0.00**	**0.00**	**0.00**	**0.00**	**35.60**	**140.68**
	Central - Unallocated	0.00	818.22	0.00	0.00	818.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	818.22
Total Eastern Region	State	2262.52	5538.50	100.00	17.06	5655.56	0.00	185.15	1.10	0.00	0.00	0.00	186.25	8104.33
	Private	0.00	1557.58	0.00	0.14	1557.72	0.00	0.00	0.00	7.12	0.00	0.03	7.15	1564.87
	Central	204.00	6717.50	90.00	0.00	6807.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7011.50
	Grand Total	**2466.52**	**13813.58**	**190.00**	**17.20**	**14020.78**	**0.00**	**185.15**	**1.10**	**7.12**	**0.00**	**0.03**	**193.40**	**16680.70**

Abbreviation: SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Statement-V

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN NORTH-EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup					Nuclear	RES						Grand Total
		Hydro	Thermal			Total Thermal		SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Assam	State	2.00	330.00	244.50	20.69	595.19	0.00	2.11	0.00	0.00	0.00	0.00	2.11	599.30
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	0.00	0.12	0.00	0.00	0.12	24.62
	Central	331.00	0.00	178.00	0.00	178.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	509.00
	Sub-Total	**333.00**	**330.00**	**447.00**	**20.69**	**797.69**	**0.00**	**2.11**	**0.00**	**0.12**	**0.00**	**0.00**	**2.23**	**1132.92**
Arunachal Pradesh	State	18.50	0.00	0.00	15.88	15.88	0.00	33.70	0.00	0.00	0.00	0.00	33.70	68.08
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.18	0.18
	Central	98.00		21.00		21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	119.00
	Sub-Total	**116.50**	**0.00**	**21.00**	**15.88**	**36.88**	**0.00**	**33.70**	**0.00**	**0.18**	**0.00**	**0.00**	**33.88**	**187.26**
Meghalaya	State	167.52	0.00	0.00	2.05	2.05	0.00	30.71	0.00	0.00	0.00	0.00	30.71	200.28
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	73.00		26.00		26.00							0.00	99.00
	Sub-Total	**240.52**	**0.00**	**26.00**	**2.05**	**28.05**	**0.00**	**30.71**	**0.00**	**0.00**	**0.00**	**0.00**	**30.71**	**299.28**
Tripura	State	16.00	0.00	106.50	4.85	111.35	0.00	16.01	0.00	0.00	0.00	0.00	16.01	143.36
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.00	0.00	1.10	1.10
	Central	62.00		33.00		33.00							0.00	95.00
	Sub-Total	**78.00**	**0.00**	**139.50**	**4.85**	**144.35**	**0.00**	**16.01**	**0.00**	**1.10**	**0.00**	**0.00**	**17.11**	**239.46**
Manipur	State	1.50	0.00	0.00	45.41	45.41	0.00	5.45	0.00	0.00	0.00	0.00	5.45	52.36
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	81.00	0.00	26.00		26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107.00
	Sub-Total	**82.50**	**0.00**	**26.00**	**45.41**	**71.41**	**0.00**	**5.45**	**0.00**	**0.00**	**0.00**	**0.00**	**5.45**	**159.36**
Nagaland	State	25.50	0.00	0.00	2.00	2.00	0.00	20.47	0.00	0.00	0.00	0.00	20.47	47.97
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	53.00		19.00		19.00							0.00	72.00
	Sub-Total	**78.50**	**0.00**	**19.00**	**2.00**	**21.00**	**0.00**	**20.47**	**0.00**	**0.00**	**0.00**	**0.00**	**20.47**	**119.97**
Mizoram	State	4.00	0.00	0.00	51.86	51.86	0.00	14.76	0.00	0.00	0.00	0.00	14.76	70.62
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.20	0.20
	Central	34.00		16.00		16.00							0.00	50.00
	Sub-Total	**38.00**	**0.00**	**16.00**	**51.86**	**67.86**	**0.00**	**14.76**	**0.00**	**0.20**	**0.00**	**0.00**	**14.96**	**120.82**
	Central - Unallocated	128.00	0.00	56.00	0.00	56.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	184.00
Total North- Eastern Region	State	235.02	330.00	351.00	142.74	823.74	0.00	123.21	0.00	0.00	0.00	0.00	123.21	1181.97
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	0.00	1.60	0.00	0.00	1.60	26.10
	Central	860.00	0.00	375.00	0.00	375.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1235.00
	Grand Total	**1095.02**	**330.00**	**750.50**	**142.74**	**1223.24**	**0.00**	**123.21**	**0.00**	**1.60**	**0.00**	**0.00**	**124.81**	**2443.07**

Abbreviation: SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Statement-VI

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN NORTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup					Nuclear	R E S						Grand Total
		Hydro	Thermal			Total Thermal		SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Delhi	State	0.00	320.00	612.40	0.00	932.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	932.40
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.07	0.07
	Central	432.03	1896.98	204.30	0.00	2101.28	47.08	0.00	0.00	0.00	0.00	0.00	0.00	2580.39
	Sub-Total	**432.03**	**2216.98**	**816.70**	**0.00**	**3033.68**	**47.08**	**0.00**	**0.00**	**0.07**	**0.00**	**0.00**	**0.07**	**3512.86**
Haryana	State	951.26	1602.50	0.00	3.92	1606.42	0.00	62.70	0.00	0.00	0.00	0.00	62.70	2620.38
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	6.00	0.00	7.06	7.06
	Central	382.80	364.02	532.04	0.00	896.06	76.16	0.00	0.00	0.00	0.00	0.00	0.00	1355.02
	Sub-Total	**1334.06**	**1966.52**	**532.04**	**3.92**	**2502.48**	**76.16**	**62.70**	**0.00**	**1.06**	**6.00**	**0.00**	**69.76**	**3982.46**
Himachal	State	323.00	0.00	0.00	0.13	0.13	0.00	108.08	0.00	0.00	0.00	0.00	108.08	431.21
	Private	386.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	386.01
	Central	733.24	89.32	60.89	0.00	150.21	14.08	0.00	0.00	0.00	0.00	0.00	0.00	897.53
	Sub-Total	1442.24	89.32	60.89	0.13	150.34	14.08	108.08	0.00	0.01	0.00	0.00	108.09	1714.75
Jammu	State	309.15	0.00	175.00	8.94	183.94	0.00	109.74	0.00	0.00	0.00	0.00	109.74	602.83
&	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.52	0.52
Kashmir	Central	571.76	183.68	127.09	0.00	310.77	68.00	0.00	0.00	0.00	0.00	0.00	0.00	950.53
	Sub-Total	**880.91**	**183.68**	**302.09**	**8.94**	**494.71**	**68.00**	**109.74**	**0.00**	**0.52**	**0.00**	**0.00**	**110.26**	**1553.88**
Punjab	State	2478.82	2130.00	0.00	0.00	2130.00	0.00	111.40	0.00	0.00	0.00	0.00	111.40	4720.22
	Private	4.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	22.00	1.75	24.45	28.65
	Central	589.72	516.18	259.72	0.00	775.90	151.04	0.00	0.00	0.00	0.00	0.00	0.00	1516.66
	Sub-Total	**3072.74**	**2646.18**	**259.72**	**0.00**	**2905.90**	**151.04**	**111.40**	**0.00**	**0.70**	**22.00**	**1.75**	**135.85**	**6265.53**
Rajasthan	State	1010.91	2420.00	113.80	0.00	2533.80	0.00	23.85	230.44	0.00	0.00	0.00	254.29	3799.00
	Private	0.00	0.00	0.00	0.00	0.00		0.00	54.30	0.22	7.80	0.00	62.32	62.32
	Central	351.56	548.38	217.74	0.00	766.12	469.00	0.00	0.00	0.00	0.00	0.00	0.00	1586.68
	Sub-Total	**1362.47**	**2968.38**	**331.54**	**0.00**	**3299.92**	**469.00**	**23.85**	**284.74**	**0.22**	**7.80**	**0.00**	**316.61**	**7702.06**
Uttar Pradesh	State	518.60	4070.00	0.00	0.00	4070.00	0.00	21.50	0.00	0.00	0.00	0.00	21.50	4610.10
	Private	0.00	0.00	0.00	0.00	0.00		0.00	0.00	4.87	73.00	8.00	85.87	85.87
	Central	619.04	2308.84	541.16	0.00	2850.00	203.72	0.00	0.00	0.00	0.00	0.00	0.00	3672.76
	Sub-Total	**1137.64**	**6378.84**	**541.16**	**0.00**	**6920.00**	**203.72**	**21.50**	**0.00**	**4.87**	**73.00**	**8.00**	**107.37**	**8368.73**
Uttranchal	State	980.85	0.00	0.00	0.00	0.00	0.00	72.45	0.00	0.00	0.00	0.00	72.45	1053.30
	Private	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	144.48	225.24	68.25	0.00	293.49	16.28	0.00	0.00	0.00	0.00	0.00	0.00	454.25
	Sub-Total	**1125.33**	**225.24**	**68.25**	**0.00**	**293.49**	**16.28**	**72.45**	**0.00**	**0.00**	**0.00**	**0.00**	**72.45**	**1507.55**
Chandigarh	State	0.00	0.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
	Private	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	39.19	25.04	15.07		40.11	4.84	0.00	0.00	0.00	0.00	0.00	0.00	84.14
	Sub-Total	**39.19**	**25.04**	**15.07**	**2.00**	**42.11**	**4.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**86.14**
	Central - Unallocated	244.18	682.32	285.73	0.00	968.05	129.80	0.00	0.00	0.00	0.00	0.00	0.00	1342.03
Total Northern Region	State	6572.59	10542.50	901.20	14.99	11458.69	0.00	509.72	230.44	0.00	0.00	0.00	740.16	18771.44
	Private	390.20	0.00	0.00	0.00	0.00	0.00	0.00	54.30	7.45	108.80	9.75	180.30	570.50
	Central	4108.00	6840.00	2311.99	0.00	9151.99	1180.00	0.00	0.00	0.00	0.00	0.00	0.00	14439.99
	Grand Total	**11070.79**	**17382.50**	**3213.19**	**14.99**	**20610.68**	**1180.00**	**509.72**	**284.74**	**7.45**	**108.80**	**9.75**	**920.46**	**33781.93**

Abbreviation: SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Statement-VII

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE ISLANDS AS ON 31.12.2005

State Region	Ownership Sector	Modewise breakup					Nuclear	RES						Grand Total
		Hydro	Thermal			Total Thermal		SHP	Wind	B.G	B . P	U & I	Total	
			Coal	Gas	Diesel									
Goa	State	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	0.05
Andaman &	State	0.00	0.00	0.00	40.05	40.05	0.00	5.25	0.00	0.00	0.00	0.00	5.25	45.30
Nicobar	Private	0.00	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17	20.17
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	**0.00**	**0.00**	**0.00**	**60.05**	**60.05**	**0.00**	**5.25**	**0.00**	**0.17**	**0.00**	**0.00**	**5.42**	**65.47**
lakshadweep	State	0.00	0.00	0.00	9.97	9.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sub-Total	**0.00**	**0.00**	**0.00**	**9.97**	**9.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**9.97**
Total	State	0.00	0.00	0.00	50.02	50.02	0.00	5.25	0.00	0.00	0.00	0.00	5.25	55.27
Islands	Private	0.00	0.00	0.00	20.00	20.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17	20.17
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grand Total	**0.00**	**0.00**	**0.00**	**70.02**	**70.02**	**0.00**	**5.25**	**0.00**	**0.17**	**0.00**	**0.00**	**5.42**	**75.44**

Abbreviation: SHP = Small Hydro Project, BG= Biomass Gasifier, BP= Biomass Power, U&I= Urban & Industrial Waste Power, RES= Renewable Energy Sources.

Annexure

AUDIT OBSERVATIONS OF C&AG

MINISTRY OF POWER

National Hydroelectric Power Corporation Limited

The Company incurred an avoidable expenditure of Rs.3.80 crore due to not carrying out overhauling of circuit breakers as per manufacturer's maintenance manual. Besides, there was generation loss of 46.35 MUs, resulting in loss of revenue of Rs.71.39 lakh.

(Para 16.1.1 of Report No. 3 of 2005) Commercial

Power Grid Corporation of India Limited

Failure to utilise 2,989 MT of imported steel for the past eight years resulted in locking up of borrowed funds of Rs.7.05 crore and loss of interest amounting to Rs.9.03 crore.

(Para 16.2.1 of Report No. 3 of 2005) Commercial

Power Grid Corporation of India Limited

Incorrect measurements recorded at the time of construction of transmission lines resulted in overpayment of Rs. 56.18 lakh to the contractors on length-specific material.

(Para 16.2.2 of Report No. 3,of 2005) Commercial

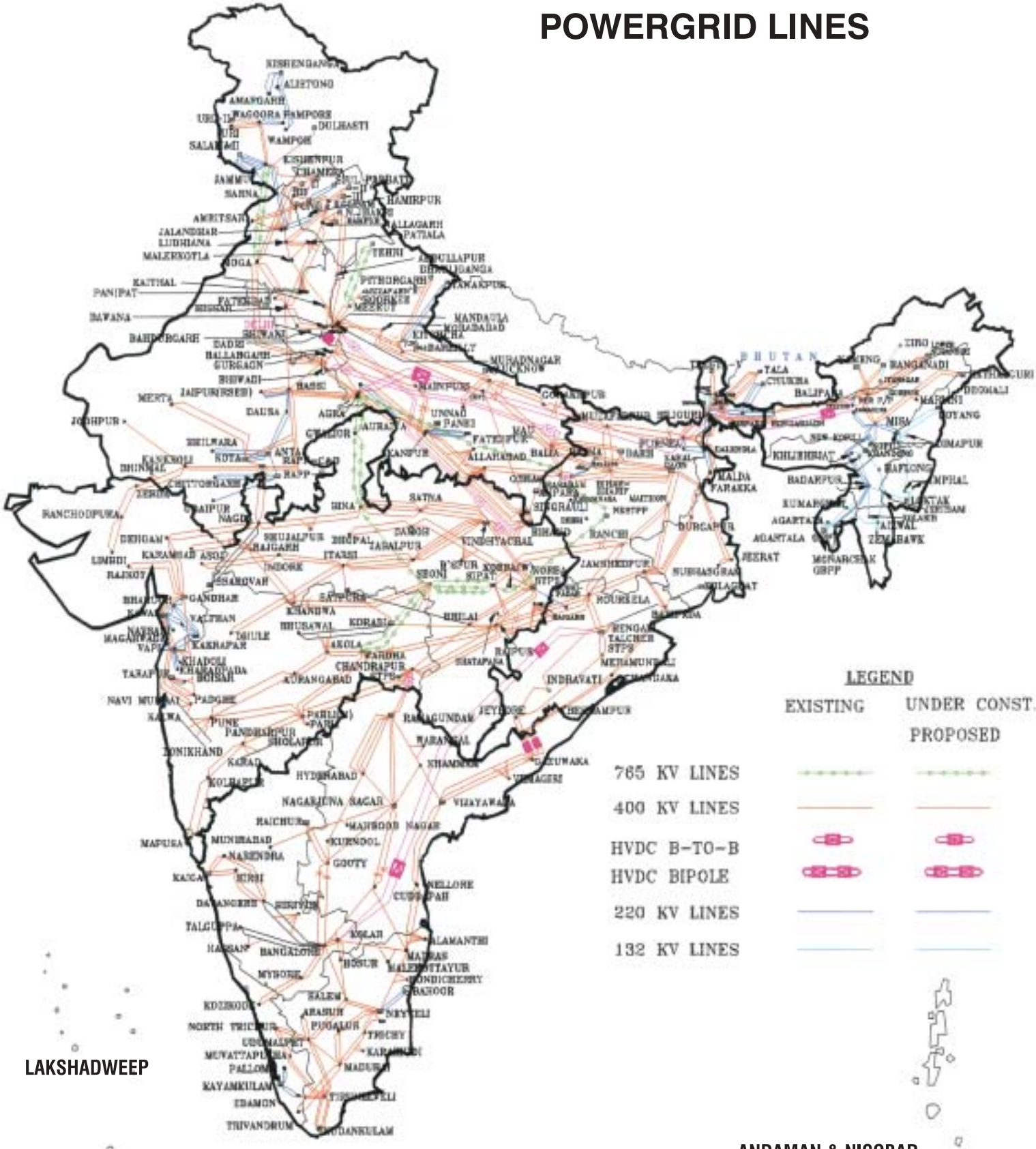
Tehri Hydro Development Corporation Limited

The Company paid penalty of Rs. 3.60 crore to Uttaranchal Power Corporation Limited (UPCL) during the period June 1999 to June 2002 due to failure to assess its demand for power properly and delay in getting additional load sanctioned.

(Para 16.3.1 of Report No. 3 of 2005) Commercial

POWER MAP OF INDIA

POWERGRID LINES



सत्यमेव जयते

Ministry of Power

Government of India

Shram Shakti Bhawan, Rafi Marg, New Delhi

Website : www.powermin.nic.in

Designed by Sobhagya, Printed at IPP Ltd.